Defining The Case For Routine Screening Of Postpartum Depression At Child Health Clinics: An Evidence Based Approach To Maternal Child Health Policy

Meridy Black (Todd)

B.ScN., University Of British Columbia, 1988

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ABSTRACT

In this study, systematic screening was explored at two-month and four-month child health clinic visits for postpartum depression as a best practice approach to reproductive mental health during the postpartum period. The study, which took place over a period of six months in the Prince George region of British Columbia, screened 207 new mothers. The study was delivered at two separate but allied primary health care sites and involved the participation of health care staff. The study entailed screening new mothers for postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) screening tool at the two-month and four-month child health immunization clinics. The study employed a mixed method research design. Twenty demographic variables were analyzed to compare positive (≥12), borderline (9-11), and negative (<9) EPDS score of participant mothers. Pearson's Chi-square test was performed to explore the relationships between the demographic variables of the positive (≥12) and negative (<12) EPDS scores of participant mothers. T-tests were used to compare the mean value of the dependent variable (EPDS scores) with the independent variables. Spearman's correlation was used as a rank order correlation test between EPDS Scores and PHN two-question survey.

Following preliminary analysis of the questionnaire, survey, and EPDS data, two separate focus group interviews were undertaken with women who had positive or slightly below positive EPDS scores and with public health nurses. The study revealed 17 (8.2%) positive screening scores at two-months postpartum and 9 (4.7%) positive screening scores at four-months postpartum for PPD using the EDPS. Therefore, the study revealed an overall positive EPDS score of 25 over the total screening period. There are at least six important areas for primary health care policy development in relation to the findings of this study. These findings are consistent with findings from other studies exploring screening for postpartum depression and have important implications for mothers and their families.

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" Children are the living messages we will send to a time we will not see".

Therefore, let us never forget that postpartum depression has left its mark thru history, and it will continue to mark its pathway into the future, and thus may the work we do to support new mothers in our communities always sponsor a high level of consciousness, as at the core of this very sensitive issue is the lives of our children... our future parents.

CHAPTER ONE

Introduction

Postpartum depression (PPD) is a mental health problem that carries substantial risks for women, children, and families (British Columbia Reproductive Mental Health Program [BCRMHP], 2002; Canadian Mental Health Association [CMHA], 2005; Mauthner, 1999; Nicholson, 1999; O'Hara, 1997; Ross, Dennis, Robertson, & Stewart, 2005). It has been shown to undermine a mother's confidence, estrange spouses, and impair social functioning (CMHA, 2005; Dennis, 2003, 2004; Lee et al., 2003). Yet, unless symptoms are severe and role dysfunction is substantial, PPD is often not recognized by affected women, their families, and health care providers (Ballard, Davis, Cullen, Mohan, & Dean, 1994; Chung, McColllum, Elo, Lee, & Culhane, 2004; Cooper & Murray, 1998; Evins, Theofrastous, & Galvin, 2000).

The current literature identifies three distinct categories of PPD (Leopold & Zoschnick, 1997; Ugarriza & Robinson, 1997). The most common is the "baby blues," also known as the maternity blues (Fossey, Papiernik, & Bydlowski, 1997, p. 18). The baby blues are distinguished by sudden mood swings, which range from euphoria to intense sadness; however, this condition has a relatively short duration and typically disappears without medication (Yalom, Lunde, Moos, & Hamburg as cited in Ugarriza & Robinson, 1997). The most severe category of PPD is postpartum psychosis (Horowitz, Damato, Solon, vonMetzsch, & Gill, 1995). The onset of postpartum psychosis is fast and harsh, usually within the first two weeks after delivery (Horowitz et al., 1995). Women who suffer from postpartum psychosis may entirely lose touch with reality (Beck, 1992), and they are often subject to hallucinations and delusions (Leopold & Zoschnick, 1997).

Moreover, PPD is characterized by feelings of sadness, despair, anxiety and irritability (Gitlin & Pasnau as cited in Ugarriza & Robinson, 1997). The differences between the baby blues and postpartum depression are based on the severity of the symptoms, how long they last, and the fact that postpartum depression interferes with day-to-day functioning to a greater degree (Gitlin & Pasnau, as cited in Ugarriza & Robinson, 1997).

Recent research has shown that postpartum depression is usually unreported and frequently undetected by health care professionals (Gaynes et al., 2005; Hagen, 1999; Hanna, Jarman, Savage, & Layton, 2004; Ross, Dennis, Robertson, & Stewart, 2005), "making the early detection of postpartum depression an important issue for all midwives and nurses working with women in the prenatal and postpartum periods" (Hanna, Jarman, Savage, & Layton, 2004, p. 191). According to Yonkers et al. (2001), missing the mark on detection for PPD poses a risk for new mothers and their families alike, making this issue a significant public health problem. Health care practitioners who deliver postpartum health services need to know how to screen for the existence of PPD, as early identification can be significant to the prevention of this potentially life threatening illness (Ugarriza & Robinson, 1997).

Cariati (2001) argues for the implementation of routine screening protocols to serve as a means of flagging mothers who are at risk for PPD and who will benefit from a timely referral to a physician for a further in-depth evaluation. Miller (1999) supports the notion of screening for PPD, claiming that early identification will lend itself to preservation of the family structure and will further seek to divert women, their families

and infants from the potentially devastating consequences which can occur when PPD remains unrecognized.

Rationale for the Research

Despite the recent upsurge in studies on postnatal mental health and several high profile media stories such as the August 2000 tragic deaths of 37-year-old doctor Suzanne Killinger-Johnson and her six-month-old baby, many women continue to suffer needlessly from PPD because of deficient detection mechanisms. It is estimated that 10% to 20% of new mothers across Canada experience various degrees of postpartum depression (British Columbia Reproductive Mental Health Program [BCRMHP], 2002; Health Canada, 2000; Stewart, Robertson, Dennis, Grace, & Wallington, 2005). A reported 331,522 women gave birth in Canada between July 1, 2002 and June 30, 2003 (Statistics Canada, 2003). In the province of British Columbia, for this same time period, 40,134 women gave birth (Statistics Canada, 2003). For the city of Prince George, 1,023 women gave birth in 2003 (British Columbia Vital Statistics Agency, 2003). Based on these figures, we can infer that PPD will disrupt the lives of 33,152 to 49,728 new mothers on an annual basis in Canada. For the province of British Columbia, this number would amount to 4,013 to 6,020 and in the community of Prince George between 102 to 153 new mothers would be affected. These numbers strongly illustrate the significance of how many mothers may be affected from PPD and how infants and families bound to the affected mother may be affected as well; hence the importance for early detection and reliable screening procedures.

PPD may emerge during the first week postpartum and can carry over into the postpartum period for up to two years (Gorman et al., 2004; Haller, 2005; O'Hara, &

Gorman, 2004; PsychDirect, 2005). PPD can affect women of all ages and races and can develop after the birth of any child (O'Hara & Gorman, 2004; PsychDirect, 2005). The implications of early detection remain significant for the immediate and long-term mental health of the mother, her spousal relationship, and the cognitive and behavioural development of her child. One way to explore the issue of PPD is to routinely screen all postpartum mothers. As reported by Cox and Holden (as cited in Matthey, 2005, p. 253), "in the absence of systematic screening, most postnatal mood disorders are not detected." Among various screening tests for PPD, experts consider the Edinburgh Postnatal Depression Scale (EPDS) the best choice in terms of its ease of administration, validity, specificity and sensitivity (Cox, Holden, & Sagovsky, 1987; Eppersen, 1999; O'Hara, 1995).

Prince George Maternity Home Visiting Program

The Northern Health Authority's[1] public health maternity home visiting program[2] in Prince George distributes resource booklets, which contain a self-administered EPDS screening tool to all new mothers. Public health nurses (PHN) present the resource booklet to new mothers within 48 hours of their discharge from the hospital. During the 60 minute home visit, the PHN is required to briefly review the 40 page resource booklet, including the self administered EPDS screening tool; however, it is unlikely that a mother in a depressive state will take the time to complete the EPDS screening tool (Beardslee, 2002; Misri, 2002; Saunders, 2003). The limited home visiting time creates a difficult

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[1] Publicly funded health services in BC, with the exception of the majority of physician services, some allied health professional services (such as physiotherapy), pharmacare, and ambulance services, are delivered under 6 regional health authorities.

[2] The Maternity Visiting Program is a program for mothers, newborn babies and their families. It provides postpartum support through home visits following the birth of the baby.

challenge for the PHNs who are required to complete a number of tasks, thus leaving only a few minutes to cover the self-administered PPD screening tool. Moreover, the literature on postpartum depression also reports that the EPDS is not an effective screening tool for diagnosis of depression in the immediate postpartum period (Lee et al., 2003). Mothers often report during their Child Health Clinic (CHC) immunization visits that they misplaced the booklet or had forgotten that they had ever been given one. (personal communication with mothers in CHC'S).

Best Practice Guidelines Relating to Reproductive Mental Health

In 2002, a working group consisting of several community stakeholders drafted "best practice guidelines" relating to the early identification, assessment, treatment and follow-up of women with reproductive mental health illnesses during pregnancy and the postpartum period (Ministry Mental Health Services, 2002). The report recommended that within a 5 year period the province should have universal screening in place using the EPDS.

Purpose of the Research

Within the context of evidence-based health care (EBHC), this study is an exploration of systematic screening for postpartum depression as a best practice approach to reproductive mental health during the postpartum period. It entailed screening new mothers for postpartum depression using an EPDS screening tool at the two-month and four-month child health immunization clinics. EBHC is based on the premise that relevant, high quality research should be a component of health care decision-making (Couzos & Murray 2003; Muir Gray, 1997). It involves continuously and systematically searching, appraising, and incorporating contemporaneous research findings into clinical

practice. The overall goal is improving patient care through life-long learning for the client's, service providers and the organization.

Statement of the Research Question

A mixed methods research design, which combined quantitative and qualitative data collection and analysis, was used for this study. As Creswell, Fetters, and Ivankova (2004, p. 7) state, the use of "mixed methods or multi-method research" is gaining acceptance and "holds potential for rigorous, methodologically sound investigations in primary care." A two-month and four-month questionnaire (see Appendix A), public health nurse survey (see Appendix B), and the EPDS were used to collect data from 207 women from the Prince George Region[3] at two-month and four month CHCs. Following preliminary analysis of the questionnaire, survey, and EPDS data, two separate focus group interviews were undertaken with women who had positive (≥12) or slightly below (<12) positive EPDS scores and with public health nurses. The specific research question that guided this study was whether the systematic or routine screening for PPD using the EPDS at two-month and four-month CHCs increase the identification of at "risk" mothers? The research objectives include:

1. What are the number of mothers who screen positive (≥12) on the EPDS at two-month and four-month CHCs?
2. What are the number of mothers who have borderline (9-11) scores on the EPDS at two-month and four-month CHCs?
3. How do the demographic characteristics of mothers who screen positive (≥12) on the EPDS scale compare with mothers who screen negative (<12)?

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[3] Prince George region includes the city of Prince George and surrounding areas with an estimated population of 80,000.

4. What is the correlation between mothers who screen positive on the EPDS screening tool and the PHN survey responses?
5. What are the perceived advantages/disadvantages of using routine screening for identifying mothers at risk of PPD as perceived by mothers who screened positive on the EPDS?
6. What are the perceptions of the public health nurses who administer the EPDS?

Organization of This Thesis Report

In chapter 1, I present the rational and purpose of the study. In Chapter 2, I place the study in context by providing an examination of the literature in regards to prevalence, screening, and aetiology, and the social and economic implications faced by women suffering with PPD. Chapter 3 presents the overall research design and methodological framework for the study. Chapter 4 presents the findings of the quantitative and qualitative data analysis. Finally, Chapter 5 presents my discussion of the findings, limitations of the study, implications of the findings for policy and practice, and future research in light of the study's findings.

CHAPTER TWO

Literature Review

In this chapter, literature that is pertinent to this study is presented. Literature searches were conducted using Alt-Health Watch, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Health Source: Consumer Edition, Health Source: Nursing/Academic Edition, Humanities and Social Sciences Index, MEDLINE data bases, the library's general catalogue and electronic journal portal of the University of Northern British Columbia library, and World Wide Web search engines. Additional sources of literature were obtained by reviewing reference lists in published articles. An initial literature search was conducted in September 2001 as part of a self-directed readings course. A second search was conducted between September 2003 and June 2004.

The literature review is organized around four subject areas that address the objectives of this study. These include prevalence and incidence statistics of PPD, screening tools, aetiology and associated risk factors, and implications for personal, child, and family health.

Prevalence of Postpartum Depression

Mental health is influenced by a variety of determinants such as education, income, employment, social support and environment etc. (Canadian Institute for Health Information, 2005; Poland, Coburn, Robertson, & Eakin, 1998; Public Health Agency Canada, 2003; Raphael, 2003). Research has shown that promoting good mental health can reduce overall vulnerability and improve the general mental health of the population (Pulliam & MacKenzie, 2003; Stephens et al., 1999; World Health Organization, 2004).

Defined as a mood disorder, depression can be identified as a condition in an individual who exhibits symptoms of fatigue, hopelessness, sadness, irritability, and helplessness (Stephens et al., 1999).

Statistics Canada (2000) reports depression as a condition that is more prevalent in women than in men. Statistics Canada's (2000) *National Population Health Survey (NPHS) 1998-1999* reports that females aged 20 to 24 experience a probable 10% prevalence of depression while males in the same age range experience a probable rate of 4%. For women ranging in age from 25 to 34 the rate is 9% while it is 3% for men. Reflecting upon this spectrum of age groupings and recognizing that these years also signify childbearing years for women, it is theoretically possible that some women who are pregnant are also depressed. Of notable significance in the NPHS of both 1994/95 and 1996/97 was that "women were more likely to experience recurring depressive episodes" (Health Canada, 1999, p. 7). The prominent percent age differences in prevalence between genders are accounted for through the rationalization that women likely experience and cope with stress and life events differently than men and this variation subsequently impacts how depression is revealed to the broader audience (Health Canada, 1999). Factors associated with reproduction such as the menstrual cycle, pregnancy, and menopause are also thought to contribute to this difference (Altshuler, 2002; Gotlib, Whiffen, Mount, Milne, & Cordy, 1989).

According to the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR),* symptoms of major depressive disorder, bipolar disorder, or brief psychotic disorder must occur within the first month after childbirth to qualify as postpartum onset (American Psychiatric Association, 2000).

The postpartum period has been identified as a time when many new mothers are susceptible to a range of emotional syndromes. The leading mental or emotional problem for mothers following childbirth is postpartum depression (Wisner, Parry, & Piontek, 2002), and one of the most significant challenges during this time is to differentiate between emotional issues and to correctly identify mothers suffering from PPD (Ugarriza & Robinson, 1997).

The prevalence[4] of postnatal depression has been studied extensively. Typically, lower rates of depression are reported by researchers who use diagnostic interviews. For example, Gotlib et al. (1989) examined prenatally and postnatally a heterogeneous group of 360 using a self-report questionnaire to measure depression. Prevalence rates of depression were 10% prenatally and 7% postnatally. Sample attrition and low reliability of the Beck Depression Index (BDI) screening tool used were reported as reasons for the reported rate of PPD. Mothers reporting sub-clinical scores on the BDI were re-screened using the State of Anxiety and Depression (SAD) tool, which yielded an increased diagnostic rate of 8.8% for PPD, but caution was advised not to generalize these results. Interestingly though, these results did raise the overall prevalence rate of 13%. Socio-demographic variables associated with depression during the prenatal period were not consistent with those reported postnatally, except for women who had postpartum depression, suggesting that there may be diverse variables influencing depression at these two times. The use of self-reports generally results in much higher prevalence rates.

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[4] Some studies were reported as point prevalence, the percentage of the population with depression at a given point in time (e.g., at 24 weeks gestational age or 9 weeks postpartum); others were reported as period prevalence, the percentage of the population with depression over a period of time (e.g., during pregnancy or from delivery to the end of the first 3 months postpartum).

Studies assessing maternal blues report that 35-80% of mothers report psychological distress within the first ten days after childbirth (Lee, 1997; Yamashita, Yoshida, Nakano, & Tashiro, 2000). Yamashita et al. (2000) further reported that 42% of the women in their study who experienced baby blues subsequently developed postpartum depression.

Epidemiological studies of postpartum samples have consistently revealed a prevalence rate of 10% for non-psychotic depression in the early period postpartum period (Cooper & Murray, 1998; Horowith et al., 1995). In one prospective study of 119 first time mothers, Kumar and Robson (1984) demonstrated that the incidence of depression rises markedly in the first twelve postpartum weeks compared with either the third trimester of pregnancy or the pre-pregnancy trimester (14% *v* 2.7%, or 5.2 relative risk).

Lane et al. (1997) conducted a study in Ireland with 385 mothers, screening at three days and six weeks postpartum. Fathers were also screened for postnatal depression. Prevalence of PPD at six weeks for mothers was reported to be 11%, which was recognized to be consistent with studies completed by Kumar and Robson (1984), Paykel, Emms, Fletcher, and Rassaby (1980), Watson, Elliott, Rugg, and Brough (1984), Nott (1987), and Glover et al. (1994), all of whom reported PPD rates between 10-20%.

Beck and Gable (2001) cite O'Hara and Swain (1996) in stating that approximately 13% of mothers will experience PPD some time within the first year. Beck (2001) highlights the magnitude of consequences resulting from prolonged delays with identification of PPD and initiation of treatment, stating that in addition to the mother's own suffering, the relationship with her infant can be impacted resulting in altered cognitive and emotional functioning.

Lastly, Canadian researchers Watt, Sword, Krueger, and Sheehan (2002) conducted a cross-sectional study of early identification of postpartum depression, which examined utilization patterns, health outcomes and costs associated with existing practices in the management of postpartum women and their infants. The study looked at a subgroup of 875 women who scored ≥12 on the EPDS. EPDS scores of ≥12 were found in 4.3% to 15.2% of otherwise healthy women. None of these women were being treated for postpartum depression. Best predictors of an EPDS score of ≥12 were lack of confident support, lack of affective support, household income of < $20,000 , wanting to stay in hospital longer, identification of learning needs while in hospital, self-identified care needs for an emotional/mental health problem that have not been met, and mother's rating of own and baby's health as fair or poor.

Cultural Predisposition

Anthropological study reports dating back to the 1960's and 1970's conducted in Asia and Africa noted that PPD was rare and therefore a disorder likely culturally tied to industrialized countries. Explanation for this variance was grounded in the belief that social support and childcare practices that typically followed childbirth in these cultures provided some protective barrier for the mother (Wile & Arechiga as cited in Miller, 1999). Ugarriza (2002) suggests that PPD is possibly linked to the cultural boundaries of the industrialized Western Nations but adds that further study into the understanding of cultural connections to the postpartum period of care for new mothers is warranted to gain a broader scope of cultural influences and prevalence for PPD.

More recent literature reporting on Chinese postpartum practices (Eisenbruch, 1983), prenatal and postpartum customs of Vietnamese, Khmer and hill tribe Laotian

pregnant women (Lee et al as cited in Miller, 1999), Latino practices (Stern & Kruckman 1983) and on reserve practices for specific Native women (Carruthers, 1987) suggest that when traditional practices are followed and support is in place, postpartum depression is not an issue. For Schmidt (as cited in Miller, 1999), western culture and religion have shaped a more individualistic responsibility for the individual. When additional variables such as social isolation rooted in urban life and financial constraints are added, mothers in Western cultures are subject to higher incidents of depression.

A number of epidemiological studies, however, have found variations in the rate of postpartum depression in certain cultural samples. For example, a substantially lower rate has been found in a Malaysian sample (Grace Lee, Ballard, & Herbert, 2001), whereas in an impoverished urban South African postpartum sample the rate was found to be as high as 34 % (Cooper et al., 1999).

Screening Tools for PPD

The Beck Depression Inventory (BDI), the Postpartum Depression Screening Scale (PDSS), the Centre for Epidemiological Studies-Depression (CES-D), and Edinburgh Postnatal Depression Scale (EPDS) were the four instruments under examination for selection with this research study. Criteria for selection included best fit for use in the CHCs, with the given population and the time period selected. Additional criteria included the tool that had the greatest validity and reliability as a first stage screening instrument. It is important to point out that screening for postnatal depression is an important first step in identifying women who are at risk of having PPD. It is only an initial step; after a positive screen, a depressive illness must be confirmed by a follow-up diagnostic examination and determination by a clinician.

Beck Depression Inventory

The BDI is a 21-item depression severity scale with a reliability of 0.92, a construct validity correlation with the Symptom Checklist 90-Revised of 0.76, sensitivity of 100% and specificity of 89% with a cut-off score of 16 (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Burt & Ishak, 2002). Although the BDI scale was originally designed to be administered by trained assessors, it is most often self-administered and takes 5 to 10 minutes to complete (Gaynes et al., 2005). The validity of the tool was established when comparisons were made between inventory scores and those based on clinical assessments (Beck et al, 1961). Beck (1996) remarks that this tool is recognized for its validity and reliability, but also points out that it has poor sensitivity in that it does not identify postpartum women who are suffering with minor depression. Several other studies discuss the potential for misleading results when the BDI is used as an exclusive scale for postpartum depression, as certain questions on the scale may be deceptive for a women following childbirth (Cox & Holden, 2003; Cox et al., 1987; Vieira, 2002).

The BDI-II, which has been validated for use in pregnancy (Holcomb et al., 1996), was developed as an indicator of the presence and degree of symptoms correlated with depression as defined in the DSM-IV, not as an instrument for specifying a clinical diagnosis (Beck, 2001). The BDI-II consists of 21 items rated on a 4-point scale and summed for a total score (range 0–63) (Beck, Brown, & Steer, 1996). Beck (1996) recommended that scores in the following ranges reflect varying levels of symptoms of depression, for non-pregnant adults scores of 0 to 13 for minimal to no symptoms of depression, scores of 14 to 19 for mild symptoms of depression, scores of 20 to 28 for moderate symptoms, and 29 to 63 for severe symptoms of depression.

However, Gaynes et al. (2005, p. 53) argues that "because of [the BDI-II] reliance on somatic symptoms, some experts worry that it may produce higher scores and more false-positive results in pregnant women than in other respondents."

Postpartum Depression Screening Scale

The PDSS is an instrument recently developed specifically for identifying post-partum depression based on studies undertaken by Beck (1992) and Beck and Gable (2000). It is a 35-item Likert-type self-report instrument covering "sleeping/eating disturbances, anxiety/insecurity, emotional liability, cognitive impairment, loss of self, guilt/shame, and contemplating harming oneself" (Hanna, Jarman, Savage, & Layton, 2004, p. 192). The tool is self scored by the mother, who uses a Likert scale ranging from 1 to 5 to indicate her degree of agreement or disagreement with each statement. Content validity was demonstrated through the literature, clinical experts and a focus group (Beck & Gable, 2000). When compared to two other instruments in subsequent research, Beck and Gable reported that the PDSS had a specificity of 72% and a sensitivity of 91%, which were higher than the specificity and sensitivity of the other scales (Hanna et al., 2004). According to Hanna et al. (2004):

> The PDSS has the advantage of enabling detailed information on seven symptom subscales to be obtained. Scores for each of these can be examined to identify the areas where women are experiencing problems so that the most appropriate action can be taken. It also has the advantage of providing a mechanism to check for inconsistent response patterns. A further advantage is the classification of women into three groups at varying risk of post-partum depression. The alpha reliability scores for the seven scales indicated high levels of internal consistency, with a ≥

> 0.90 for five of the scales. These scores are similar to those reported elsewhere. However, the instrument is long and quite time-consuming, both to complete and to score. (p. 78)

Centre for Epidemiological Studies-Depression

The CES-D is a 20-item scale that evolved from existing instruments for assessing depression (Horowitz et al., 1995). This self-report scale is easily administered and completed in a few minutes. Other strengths of the scale are that it is easily scored and that the measurement of symptoms intensity is connected to frequency of occurrence (Horowitz et al., 1995).

Limitations of the CES-D scale are that it is not a diagnostic tool for depression and therefore recommended to be used in conjunction with other screening tools. The tool is refined to explore depressive symptoms and may therefore be self limiting in its utility for use in the postpartum as it does not consider the postpartum adjustment period; there remains potential for bias with questions that may be reflective of depression at other times of life but may be a normal reaction in the postpartum, thus potential for false positive scores. Finally, no items on the scale are specific to childbirth (Horowitz, et al., 1995).

The Edinburgh Postnatal Depression Scale

The EPDS was developed by researchers Cox, Holden et al. (1987) and was designed to allow screening of postnatal depression in the primary care setting. The innovation for this screening tool was based on the acknowledgment that the existing tools were limited in their capacity to detect depression in pregnant or postpartum women (Cox et al., 1987). In 1983, Cox conducted a prospective study in Scotland and Uganda

which revealed rates of postpartum depression in the range of 13% and 10% in these two populations of women. The statistics signified the need to act on the development of a tool sensitive to pick up this mood disorder (Cox, & Holden, 2003).

The 13 item questionnaire was validated with a study sample of 60 women (Cox, 1986). The tool was found to successfully distinguish between women who did and did not have depression. During a factor analysis of the questionnaire, it was realized that the questionnaire could be reduced to 10 questions while maintaining its effectiveness. A second validation of the 10 item questionnaire with 84 postpartum women was successful in identifying women with major depression when cut off scores were rated at 12 or 13. The following two questions are examples of the 10 questions found on the EPDS screening tool:

Question 3: I have blamed myself unnecessarily when things went wrong: yes, most of the time =3: Yes, some of the time = 2, Not very often = 1; No, never = 0.

Question 10: The thought of harming myself has occurred to me: Yes, quite often = 3; Sometimes= 2; Hardly ever = 1; No, never= 0.

The specificity (the proportion of women with research negative diagnostic criteria (RDC) who truly did not have depression) was rated at 78% while the sensitivity of the EPDS, "the proportion of women with positive RDC who were true positives, was rated at 86%" (Cox & Holden, 2003, p. 17). According to Mausner and Kramer (1985) sensitivity is defined as "the ability of a test to identify correctly those who have the disease" while specificity is "the ability of a test to identify correctly those who do not have the disease" (p.217).

The split half reliability of the EPDS was 0.88, "obtained by dividing items on the scale into two halves, which were then compared; a high correlation suggested that the test was measuring the same items" (Cox & Holden, 2003, p. 18). Literature reviews in the United States maintain the EPDS has been recommended for use to aid the primary care screening since it is a simple, self-rated screening inventory that can be administered to the patient at the time of her postpartum check-up (Kendall-Tackett, 1994; Wohlreich & Lydiard, 1994). It is also recommended that when the EPDS is the only tool used in a research project, that a cut off score of 9 or 10 be used as a first-stage screening scale for the purpose of identifying depression. The EPDS is a useful tool for initiating secondary prevention for depression by identifying early onset of symptoms. Finally, it is recommended to increase the cut-off score to 12 or 13 when using the EPDS as part of a screening program within the primary care environment (Cox & Holden, 2003). Horowitz et al, (1995) adds that the ten item EPDS scale can be completed in five to ten minutes by self-administration and is easily scored. They point out that the statements on the scale reflect the underlying content of PPD and that each response offers four options, which are categorized according to length or severity of the symptom under question. While the EPDS has documented reliability in certain populations, some critics have raised concerns about the cultural specificity of its language (Beck & Gable, 2002; Mantel, 2003; PND Training, 2005). Finally, it is important to point out that the EPDS is "merely a screen for depression that reveals dysphoria or low mood at the time of completion and indicates a need for further assessment. It does not provide a differential diagnosis of mental disorder, nor can it replace clinical judgment. Screening gives an indication of a

women's need for help and should be a precursor to diagnosis and intervention" (Cox & Holden, 2003, p. 58).

Of the four screening tools examined in this review, the PDSS and EPDS have the highest specificity and sensitivity in detecting minor and major postpartum depression and have a detection rate of 94% and 78% respectively (Beck & Gable, 2000) compared with 56% for the BDI-II (Cox et al., 1987).

Aetiology of Postpartum Depression

While the aetiology of PPD is still debated, there is a general consensus in the literature that PPD results from complex interactions among biological, psychological, and social factors, though for any given individual one factor may be more important (Stenier, 1990).

Biological Theories

Deregulation of neurotransmitters, altered levels of cortisol, prolactin, estrogen and progesterone hormones following delivery, as well as thyroid disorders have been postulated as having etiological connections to PPD (Birkhäuser, 2002; Bloch, Rotenberg, Koren, & Klein, 2000; Holden & Phil, 1991; Leopold & Zoschnick, 2003; Sichhel &.Driscoll, 1999). In the study by Abou-Saleh (1998), the women who were depressed immediately after delivery had significantly lower levels of prolactin. Also, those who developed depression within 6 to 10 weeks of delivery had significantly lower levels of prolactin and higher levels of progesterone than non-depressed women. In another study conducted by Bloch et al. (2005), 1800 postpartum women were assessed for risk factors for postpartum mood disorders during the first 2 to 4 days after delivery. Bloch et al. (2005, pp. 16-17) reports that the results of this study help to advance the

"hypothesis that the aetiology for postpartum mood disorders may be related to differential hormonal sensitivity."

Leopold and Zoschnick (2003) report that while neurotransmitters show no apparent influence on PPD, lower norepinephrine levels show some connection to the intensity of PPD. While Hagen (1999, p. 20) notes that cortisol, prolactin, estrogen and progesterone "appear to have surprisingly little to do with PPD in any case," thyroid dysfunction in the postpartum period is found to be a relatively common factor and may very well be connected with depressive symptoms (Leopold & Zoschnick, 2003; Spinelli, 1998). For Sichel and Driscoll (1999), the measurement of thyroid levels is a critical step in the treatment of PPD, since "5 to 9 % of women have abnormal thyroid levels postpartum, and some of them are depressed as well" (p. 204). They argue that in order to elucidate whether the depression is linked to the thyroid or the postpartum hormones, testing is imperative.

Evidence suggests that biological and physiological factors are clearly at play during the postpartum period. However, to what extent and in what way they contribute to postpartum depression is not yet clearly understood (Beck, 2002; Bloch et al., 2005; Leopold & Zoschnick 2003).

Medical Model

The medical model assumes that the physiology of childbirth is universal (Sawyer, 1999) and as a result, PPD is regarded as a "disease" or "illness" (Mauthner, 1999). From the medical model perspective, the etiological origins of PPD are linked to genetic predisposition, past history and hormonal variation for individual women (Nicholson, 1990).

The difficulty with the medical model, according to Mauthner (1999) is its devaluation of women's own perspectives and associated individualistic approach rooted in deficiencies pertaining to the individual mother. For Mauthner (1999, p. 145), "Taking the individual as the basic unit of analysis excludes looking at broader social, political, economic and structural contexts and the ways in which they intersect with individual women's circumstances." Beck (2002) acknowledges the limitations of this individualistic theoretical model and its treatment approaches as having significant consequences because women are prescribed one of three categories; hormone replacement, anti-depressant medication or treatment using anti-convulsive methods. Similarly, Nicholson (1998) argues that the medical model fails to accord sufficient weight to the subjective feelings of women who experience emotional turbulence following child birth. While the medical model discourse has been challenged to some extent by social scientists as a model which fails to acknowledge the impact of additional life stressors on an individual's psychological well-being, there is still an attempt to "medicalize" (Mauthner, 1999; Nicholson, 1998).

Feminist Theory

The feminist theory offers a diverse perspective to that of the medical model. Feminist theory embraces the social realms of women's worlds as reasons for problems and further suggests that motherhood is challenged by the social, political and cultural contexts in which we live. It maintains that mothers' experiences of childbirth should be examined and their voices listened to; to exclude those voices only serves to perpetuate postpartum depression and the controlling forces of the medical model (Beck, 2001; Lazarre, 1997; Mauthner, 1999).

Lazarre (1997, p. 283) asserts that the medical model imposes an "impossible standard of the motherhood mystique," which feminist authors maintain is the connection to PPD. Mauthner (1995) affirms that there are limitations of "determinism" in the medical model that undermine the full capacity of women as thinking, feeling and experiencing human beings. Two additional points which give rise to conflict for the feminists about the medical model are the blaming of mothers through the individualization of PPD, and the blatant disregard for hearing women's voices and validating the realities of their experiences.

Feminist theory relates the concept of bereavement and loss to PPD (Nicholson, 1989). Justification for the concept of loss is embedded in the understanding that childbirth and transition to motherhood require major psychological shifts which are normal in response to these experiences, and that women need recognition and opportunities to discuss their experiences to therapeutically make the adjustment and move into this new stable role.

Smith as cited in (DeJoseph, 1997, p. 516) discusses postmodernism and the feminist analysis of women's depression following childbirth asserting that feminists must "question gender and the relations of ruling." Further, (Smith) recognizes that there is no one truth and that there is no one single explanation for life occurrences. This opens up opportunity for discussion about issues around depression and women and theories of childbirth. In *Rethinking Mental Health and Disorders*, Ballou and Brown (2002) wrote:

> Human behavior is increasingly being forced into the box of biology. Hormonal, evolutionary, and genetic models of behavior are more frequently being proposed

as explanations for all human behaviors, even in the absence of strong empirical science to support such models...(p. xi)

Psychosocial Theory

Horowitz et al. (1995, p. 269) report, "psychosocial models suggest that history of psychological difficulties and life stressors are important predictor variables" for PPD. For Horowitz, potential psychosocial predictors include self-esteem, the mother-daughter relationship, and separation from one or both parents in childhood or adolescence, and low parental emotional support.

According to Murray and Cooper (1996), the major risk factors of etiological significance for PPD are rooted in the psychosocial aspects and are identified as unemployment, presence of marital conflict, occurrence of stressful life events, and absence of social support from either spouse, friends or family, and history of depression. Wisner et al. (2002) further propose that factors such as stressful life events, past episodes of depression, and mood disorders in the family may also increase vulnerability to PPD.

A meta-analysis of 44 studies conducted by Beck (1996) identified postpartum depression predictors. Nine predictors were found to have significant relationships to the occurrence with PPD. These include: prenatal depression, child care stress, life stress, lack of social support, prenatal anxiety, infant temperament, maternity blues, marital dissatisfaction and history of previous depression. Beck (2001) further reports on a meta-analysis of 84 studies that supported earlier findings of predictors identified in her 1996 study with the addition of four more factors: single marital status, low socioeconomic status, low self-esteem, and unplanned/unwanted pregnancy.

A substantive theory based on grounded theory method evolved from a study conducted by Beck (1993) that included interviewing 12 mothers diagnosed with PPD and engaging them in discussion for their descriptions pertaining to the development of PPD. In the four stage process identified as "teetering on the edge," loss of control was the overriding social psychological issue for these mothers (Beck, 1993). Beck (2002) cites three additional theories: attachment theory, interpersonal theory and self-labelling theory which offer yet further analysis to the premises discussed within the medical model and the feminist theories as aetiology relates to PPD in new mothers.

Attachment Theory

Research in the field of adult attachment is relatively new and emerges from the work of Bowlby (1988). Not only is the interaction between attachment and depression complex, but there is also a lack of empirical evidence regarding the directionality of the interaction between depression and attachment difficulties. For example, while insecure attachment relationships in the formative years may predispose an individual to depression later in life (Anderson, Beach, & Kaslow, 1999), depression may also lead to difficulties in developing and/or sustaining positive and secure attachment relationships (Sexson, Glanville, & Kaslow, 2001).

There is a preponderance of research that links effective, adequate parenting to optimal attachment in children (Ainsworth, 1973; Baumrind, 1991; Bronfenbrenner, 1986, 2002; Murray, 1992). Several studies have reported that maternal depression increases risk for insecure attachment particularly so if the depression is severe and chronic (Gaensbauer et al., 1984; Teti, Gelfand, Messinger, & Isabella, 1995).

However, research in the area of PPD has largely disregarded the possible contribution of maternal attachment style. One of the few studies investigating the relationship between attachment style and postnatal depression was recently conducted by Meredith and Noller (2003). In a sample of 74 mothers with infants and married to the baby's fathers, "those identifying themselves as depressed reported a more preoccupied attachment style by comparison with their non depressed counterparts" (Meredith & Noller, p. 672). To determine the link between the mother's attachment style and her level of depression, a discriminant analysis was carried out with the presence or absence of depression as the grouping variable. The four attachment scales, secure, preoccupied, fearful, and dismissing, formed the dependent variables. Results of this study suggest that attachment style is related to PPD. While postpartum depression was not significantly related to marital quality, a trend did emerge between attachment style and marital quality (Meredith & Noller, 2003). These findings also highlighted the importance of further research to clarify the relationship between attachment style and postnatal depression (Meredith & Noller, 2003).

Interpersonal Theory

Interpersonal theory proposes that the divergence between desired level of support received during the transition to motherhood are the causative factors of PPD, given that social human beings' personalities are defined through interpersonal experiences. (Beck, 2002; Sullivan, 1953) The association between depression and marital disharmony is also a factor considered by interpersonal theory (Beach & O'Leary, 1992; Beach, Fincham, & Katz, 1998; Briscoe & Smith, 1973; O'Hara, Neunaber, & Zekoski, 1984). Studies have revealed, however, that the direction of causality is often difficult to elucidate, in that

typically there is difficulty ascertaining which came first: disharmony, or depression (Beach, Sandeen, & O'Leary, 1990; Briscoe & Smith, 1973). For example, in one study patients with higher marital satisfaction scores were less likely to suffer a clinically significant return of their depressive symptoms (Hooley & Teasdale, 1989), whereas, Marks, Wieck, Checkley, and Kumar, (1992) found that mothers who are dissatisfied with their partners or whose partners are non-communicative are more likely to have a relapse of their depressive illness after childbirth.

A Canadian study by Misri, Kstaras, Fox, and Kostaras (2000) investigated the impact of partner support in the treatment of mothers suffering from postpartum depression (PPD). Patients who met the DSM-IV criteria for major depressive disorder with postpartum onset were randomly assigned to two treatment groups: the 1st group (control group) consisted of patients only (n = 13), while 2nd group (support group) consisted of patients (n = 16) and their partners. Compared to the control group, the support-group patients displayed a significant decrease in depressive symptoms and other psychiatric conditions. Although this study had small number of patients, it is an interesting finding that a simple intervention, such as including partners in psycho-educational discussions improved patients' symptoms.

Self-Labelling Theory

Self-labelling theory asserts the enquiry of mental illness from a different perspective, one that views it as "emotional deviance which results from unsuccessful emotion management attempts" (Thoits as cited in Beck, 2002, p. 286). Thoit (1985) implies that self-labelling theory is an activity that occur independent of the reactions of other people. Rather, these people deviate from social norms and actively break the rules

without consideration for the meaning others may formulate about such activity. With women who have postpartum depression, Taylor as cited in Beck (2002, p. 286) maintains that the reason for this is that "feeling norms" and "expression rules" are altered. When mothers feel a deviation from the expected reaction to what motherhood is suppose to hold, "the shame and guilt experienced when the over-whelming rush of love and instant maternal bonding they expected did not come right away" can be severe and contributory to PPD (Taylor as cited in Beck, 2002, p. 286).

Explanatory Model

In contrast to these theories, the Pacific Post Partum Support Society (2005) developed a multidimensional explanatory model. This explanatory model of PPD is holistic in its scope and includes the dimensions of a woman's personality, general losses, physiological issues, and psychodynamic, anthropological and psychosocial capacity. This all-inclusive model does not filter out any one explanation or aetiology for the occurrence of PPD in mothers; rather, it supports the understanding that the world is a complex place and that interaction with each level of life adds it own layer of experience through which each person interprets particular and valuable meaning.

Implications for Personal, Child, and Family Health

PPD has important and significant outcomes for the depressed mother herself, her infant and her family. The long- term consequences for mothers with PPD are largely influenced by the duration of time that passes prior to the initiation of appropriate treatment (England, Ballard, & George, 1994). In a study conducted by McIntosh (1993), it was concluded that of all the women who desired help, only 26% actively sought it while the remaining mothers suffered in silence. The underlying silencing mechanisms

were "fearing shame and embarrassment at what they felt represented personal inadequacy and failure" (Halopainen 2002, p. 40). Holopainen (2002) further notes that seeking consultation for symptoms is not done because women lack understanding that the symptoms are associated with depression. Additionally, he cites McIntosh (1993), who raises the issue of the social stigma attached to being labelled as having a mental illness, when diagnosed by either physician or psychologist. This social stigma, McIntosh maintains, can raise negative feelings, such as anger or shame within mothers.

Mauthner (1995) explains that the isolation and loneliness experienced by mothers with depression is not of a geographical nature, but rather it relates to removing self from interactions in relationships. This action has negative consequences as highlighted by Josefsson, Berg, Nordin, and Sydsjo (2001), who remarked that PPD can impact a mother's personal and social contexts, as well as her relationships with her infant and her partner. They also highlighted the impact on an infants' psychological and intellectual development possibly rising from early exposure to the mother's depression.

Mother-Infant Attachment Issues

Jennings, Ross, Popper, and Elmore (1999) highlight the reality that mothers who are suffering with PPD have thoughts of harming their infants and that practitioners need to routinely question mothers in order to determine their intentions regarding harm towards the infant or self. Although infanticide is not the most common side effect of PPD, it is the most horrific (Kendall-Tackett, 1994).

A subtler but similarly destructive effect of PPD is the emotional distancing that can occur between mother and infant, which undeniably affects the relationship (Kendall-Tackett, 1994). Righetti-Veltema, Conne-Perréard, Bousquet, and Manzano (2002) note

that because mothers are typically the primary care giving figures with which infants first communicate, a mother's affective mood plays a critical role in both the development of her infant and in the mother-infant relationship. PPD negatively impacts this relationship and often goes unrecognized by the mother herself. Kendall-Tackett (1994, p. 11) report "Research reveals that maternal depression is similar to maltreatment in its effects on children's development."

A study by Teti et al. (1995) highlighted the quality of early attachment and maternal depression with the findings that the security of infants and preschool children were influenced by maternal depression. The study stresses that it is the severity and chronicity of maternal depression that must be considered in context of the issues of attachment and ultimate outcomes for children.

Another study by Murray, Fiori-Cowley, and Hooper (1996) determined that infant attachment had less connection to the substance of early face to face contact with the mother experiencing depression, but more connection to the mother's own experience from her childhood attachment with her mother.

Infant Development Issues

Murray (1992, p. 547) reports that infants of postpartum depressed mothers demonstrated cognitive delays in the domain of "object concept tasks." Murray (1992, p. 547) refers to Piaget's object concept tasks as tasks, which are "designed to elicit infant cognitive schemas regarding the independent existence of objects by requiring the infant to search for objects undergoing a series of displacements in or under one of two identical occluders." Murray (1992) further asserts that when a mother experiences depression, it affects her ability to engage with the infant, thus impacting the mother-infant interaction:

> The adaptations required of the mother by the young infant appear to pose particular difficulties when maternal depression occurs in the context of vulnerability in the area of the mother's own unmet dependency...Thus the potentially precarious nature of the mother's capacity to relate appropriately to her infant....this suggests that difficulties in relating to the infant are not confined to periods of infant distress, but may also be apparent in other forms of contact, such as play, that demand intimate involvement. (p. 229)

Murray's (1992) findings support other study results cited in the article, which reveal that the quality of mother-infant relationship is influenced by postpartum depression. In the same study, language development and lowered mental development were negatively influenced from mothers experiencing postpartum depression who were from lower social status and who had male infants.

Murray and Cooper (1996) indicate that adverse child outcomes seem to have more association with the context of altered interactions between the depressed mother and her infant than with the mother's depressive indicators.

A study conducted by Field et al. (1988) explored the behaviour of 74 infants 3 to 6 months of age during face-to-face interactions with their depressed mothers, and then with non-depressed women. Field et al. (1988) concluded that overall interactions between the depressed mother and infants were less positive. Of further concern, they reported that when the infants of depressed mothers interacted with the non-depressed women, the behaviour of the infants did not change. In an earlier study by Field et al. (1985), it was found that the depressed mothers' moods fluctuated more, which in turn had an influence on the infant's behaviour. Field et al. (1985) remarked that mothers

experiencing depression had more self-limiting attitudes about raising a child and they were less engaging with their infants.

The importance of early detection of PPD with new mothers is defended in these research studies. The benefits of early detection and subsequent early intervention can determine the well-being of the baby. Weinburg and Tronick (1998) maintain that the socio-emotional development of infants is impacted by the responses of their depressed mother. They add that "clinicians need to be aware of mother-infant interaction difficulties...as they emerge early in life...adding the importance of evaluating the relationship and coping ability" (p. 59).

Beck (1995) reports on a meta-analysis of the effects of PPD as it relates to long-term consequences, adding that the literature has repeatedly given attention to the short-term effects for infants. In terms of infant outcomes, Beck (1995) concluded that there was a negative effect on development for the infants over one year of age. Although the very long-term outcomes were not reported, it can be speculated that chronic exposure to negative interactions would play a role in determining the child's emotional development.

Infant Interaction/Relationship Issues

Campbell, Cohn and Meyers (1995) explored the impact of postpartum depression, experienced within the first two months, on the mother-infant relationship in first time mothers, and findings indicate there was no influence. Of significance, however, was their discovery that for depression which persisted through the first six-month postpartum, results showed relational impact in terms of ability to be positive during play and competency with infant feeding. This study supports the importance of

screening for PPD with new mothers at more than one interval of time, with screening at two and four months there is a greater probability that more mothers will be identified.

In contrast to Campbell et al.'s (1995) findings at two months, Cohn, Campbell, Matias, and Hopkins (1990) studied face-to-face interactions between two-month-old infants and mothers who did and did not have PPD. Their findings report that there were more intrusive negative effects displayed during the face-to-face interactions for mothers with PPD and that boys experienced less positive interactions than did girls.

Beck's (1996) phenomenological study of 12 mothers with PPD and their interactions with their children signified the predominant struggle of coping with childcare responsibilities. When a mother's responsibilities extended to more than one child, Beck (1996, p. 103) reported that "detrimental relationships" surfaced with older children as the demand surpassed the mother's capacity, periodically escalating to uncontrolled anger.

Social and professional support can serve to divert negative mother-infant interactions and relationships and reduce potential for abuse when early detection screening practices are in place through Child Health Clinics. Health professionals can foster positive relationships with new mothers and make timely referrals to supporting community agencies which will serve to promote positive mother-infant relationships and attachment.

Spousal Issues

Mothers experiencing PPD can influence the outcomes for partners (Boath, Pryce, & Cox, 1998). Holden and Phil (1991) discuss how a mother's pattern of mood variation can create a home environment that is tense and stressful for the whole family. They

further describe how lack of knowledge about what mother's behaviour represents can serve to aggravate the couple's relationship. Misri et al. (2000) support the view that a mother experiencing PPD will impact family and marital relationships. Partners are acknowledged for the period of adjustment they transit through at the time of the birth but when there is fragility around marital adjustment, this has been identified as one of the key risk factors influencing PPD. Lane et al. (1997) reported a prevalence of depression in fathers of 1% at six weeks postpartum. Holopainen (2002) discusses how partners can experience problems during the adjustment period, but overall, their key role revolves around supporting the new mother, thus impacting her ability to manage.

Economic Costs

A study conducted by Petrou, Cooper, Murray, and Davidson (2002) examined the economic costs of PPD in a specified cohort of 206 British women who had been identified as being within a high risk category of developing PPD. Results from the study revealed that the cost differential which included both social and health care was "392.10 pounds between women with and without post-natal depression" (p. 511). On reflection of the annual birth rate in Great Britain and in consideration of a PPD rate of 13%, Petrou et al. (2002) maintain that the "national economic burden of the condition to the public services amounts to approximately 35.7 million pounds per annum" (p. 511).

Petrou et al. (2002) discuss the results of the study, highlighting the professional and political priorities for PPD that includes discussion about primary and secondary prevention interventions. Petrou et al. (2002) further suggest investigation take place that focuses on the allocation of financial resources, which are both cost effective and clinically effective. Excluded from these findings are data pertaining to the actual loss of

any economic income related to employment and productivity for a mother living with PPD.

Stephens and Joubert (2001) report on the economic burden of mental health in Canada from a study done in 1998. The study reveals costs of social workers and psychologists, which totalled $278 million with an added cost of $ 6 billion due to "reduced productivity associated with depression and distress over the short term" (p. 1). Stephens and Joubert (2001) call attention to the magnitude of the financial burden that Canada possesses in dealing with its citizens' mental health issues: $14.4 billion.

This review highlights the importance of early detection and treatment by primary care teams. It also suggests that preventive interventions might prove particularly profitable.

CHAPTER 3

Research Design

The selection of a research design is one of the most important decisions researchers makes in order to answer their research questions (Creswell, 2003; Crotty, 1998). As noted by Riessman (1994), the primary objective when approaching research is to plan a method of inquiry that fits the problem statement, research context, and objectives of the research question. Because this study was intended to explore systematic screening for PPD as well as the experiences of new mothers with the self-administered and structured screening approach to PPD detection, a descriptive mixed method research design was used to guide the research process.

Descriptive Research

According to Royce, Thyer, Padgett, and Logan (2006), descriptive research is an appropriate design choice for studies seeking "to better understand the characteristics or needs of clients being served at a participating agency" (p. 2). Researchers conducting descriptive studies seek an accurate accounting of events that most people including researchers and participants observing the same event would agree is accurate (i.e., descriptive validity), and an accurate accounting of the meanings participants attributed to those events that those participants would agree is accurate (i.e., interpretive validity) (Maxwell, 1992). For Grimes and Schulz (2002, p. 145), "good descriptive research...should answer five basic "W" questions—who, what, why, when, and where—and an implicit sixth question, so what?"

Descriptive studies have both strengths and weaknesses. From a strengths perspective, the data are already available and thus inexpensive and efficient to use, and

few ethical difficulties exist. However from a limitations perspective, temporal associations between putative causes and effects might be unclear and a dangerous pitfall is that the investigators might draw causal inferences when none is possible.

Mixed Research Methods

Mixed methods research refers to those studies that integrate one or more qualitative and quantitative techniques for data collection and/or analysis (Babbie, 1998). The overriding reason behind mixed method research is that neither quantitative nor qualitative methods are in themselves adequate enough to address the research objectives (Tashakkori & Teddlie, 2003; Trochim, 2001). A hallmark of mixed method research is that it enables evaluation researchers to be more flexible and holistic in their investigative techniques. Mixed methods research also helps researchers to validate quantitative results by linking the information extracted from the qualitative phase of the study to further analyze quantitative data (Madey, 1982). In addition, by using both quantitative and qualitative techniques investigators can seek convergence and corroboration of findings (Onwuegbuzie & Leech, 2004) and "*zoom in* to microscopic detail or to *zoom out* to indefinite scope" (Willems & Raush as cited in Onwuegbuzie & Leech, 2004, p. 771).

In recent years, mixed method approaches to research have been increasingly recognized (Creswell, 2003). Johnson and Onwuegbuzie (2004, p. 15) explain "mixed methods research offers great promise for practicing researchers who would like to see methodologists describe and develop techniques that are closer to what researchers actually use in practice." Given my commitment to evidence-based primary health care, I embrace the notions of mixed method research as an approach that offers the best chance of answering the research question.

Triangulation

Mixed methods are also considered a form of triangulation (Denzin & Lincoln, 1998). Begley (1996) describes five types of triangulation: data, investigator, theoretical, methodological, and unit of analysis. She supports that triangulation is merely the combination of different methods of investigation and is a narrow one, and recommends that nurse researchers increase their utilization of the four less frequently used types. For the purpose of this study both methodological and investigator triangulation will be used.

Methodological triangulation. Methodological triangulation involved the use of quantitative and qualitative data collection strategies. The quantitative and qualitative data was collected in sequential phases (Creswell, 2003). More specifically, the sequential explanatory strategy (Creswell, 2003) is "characterized by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data." (p. 215). In this study the quantitative and qualitative data collection and analysis (Phase One) served as a basis for the focus group discussion (Phase Two).

Investigator triangulation. Investigator triangulation entailed the use of two co-evaluators in the qualitative data analysis phase of the study. Each evaluator took independent notes during the focus group session. The findings from each evaluator were then compared. Because the different evaluators arrived at the same conclusion, validity was established and further investigation was not warranted.

Sampling

This study employed three different non-probability sampling strategies. First, a consecutive cohort sample or reliance on available subjects strategy (Babbie, 1998) was used to select participants for Phase One of the study. Second, a purposive sampling

strategy (Schutt, 2004) was used to invite mothers who scored 11 or greater on the EPDS to take part in a focus group. Third, an expert sampling strategy (Trochim, 2001) was used to select two co-evaluators to assist with the qualitative data analysis.

Consecutive Cohert Sampling Strategy

All new mothers registered by Vital Statistics from October 2004 to March 2005 and who were resident of the Prince George region were invited to participate in the study.

Inclusion criteria. Mothers who gave birth at Prince George Hospital (PGRH) and mothers who resided in the Prince George region were entered into Northern Health's database. This registry of new infants to these mothers constituted the preliminary list of potential study participants. Inclusion criteria consisted of mothers 19 years of age and older who had an adequate literacy level in English so as to comprehend the participant information sheet. Given the study January 2005 start date and July 2005 end date, infants born between November 2004 and January of 2005 formed the group of mother-infant dyads to be consecutively included as potential participants for this study.

Calculation of sample size. Historically, the birth rate for Prince George is 1000 births per year, which is approximately 83 births per month. The average CHC attendance rate for the two and four month child health immunization clinics are consistently 85% about 70 mothers. Based on a conservative uptake rate of 80%, a further calculation defined the strategy for attaining a target sample size of 200 participants. It was anticipated that each month of the study (n=70) mothers would consent to participate, then in three months the sample size would be about 210. This sample size of 200 was targeted to achieve a power calculation of 0.880, which would be sufficient in

power to conduct the descriptive statistics which would be generated in the quantitative analysis. To generate the targeted number of participants for the focus group which was 7 (+/-) 2, the study screened participants from January 2005 to May 2005. Based on the current literature, which iterates that the prevalence of PPD is 13%, it can be speculated that of the 200 mothers participating, 26 will screen positive. From this 26, the researcher projected that this size would be adequate to achieve the targeted participant number for the focus group.

Purposive Sampling Strategy

Purposive sampling is a method where the participants are selected by the researcher subjectively (Babbie, 1998). The focus group sample for this study was limited to nine women. Focus group size is variously recommended as six to ten (Morgan, 1988), seven to ten or as broadly as four to twelve (Krueger, 1994). Morgan (1988) concluded that the greatest range of acceptable size is four to twelve. Because more than nine women scored above 11 on the EPDS scale, the following criteria were used to select a broad range of participants:

a) range of age

b) range of academic experience

c) range of race and cultural backgrounds

d) range of social status

Expert Sampling Strategy

In selecting the co-evaluators a list of health professionals with either research experience or specific expertise within the field of PPD, was established. The two reasons Trochim (2001) identifies as beneficiary for using expert sampling are that this creates

evidence to validate the type of sampling selected and facilitates the inclusion of opinions from those regarded as experts.

Phase One of Study

The study began in January 2005. Phase One consisted of three waves of data collection. The first wave of data collection involved the group of participants screened in January 2005 at the two-month CHC and re-screened in March 2005 at the four-month CHC. The second wave of data collection involved the group of participants screened in February 2005 at the two-month CHC and re-screened in April 2005 at the four-month CHC. The third wave of data collection involved the group of participants screened in March 2005 at the two-month CHC and re-screened in June 2005 at the four-month CHC. A small number of participants screened at the two-month CHC in April and May were re-screened at their four-month CHC in July 2005.

To maintain the rigor of the research process, participant mothers attending the two- month and four-month CHCs were closely checked to ensure that their infants met the requirement age range of less than three months at the two-month CHC and less than five months of age at the four-month CHC. If participant mother's infants did not meet these age requirements, their mothers' were omitted from the study as PPD may present differently outside the two and four month time intervals.

Implementation Process

A series of three meetings were initiated by the researcher prior to the implementation of the research study to clarify the roles and responsibilities of public health personnel (records staff, health aide staff, and public health nursing staff) involved in the collection of data for the study.

First meeting. The first meeting involved the records staff. At this meeting, it was explained to the records staff that their main task was to create "pop-up alerts" (for a definition of terms see Appendix E) on the client files for the infants whose mothers had volunteered to participant in the study. The "records staff" were also responsible for ensuring that the file code numbers were correctly transferred from the appointment list into the "iphis database".

Second meeting. The second meeting was held with health aide staff. At this meeting it was explained to the health aides that they were given the responsibility to receive mothers and infants at the "check-in" for CHC and to inform mothers about the study and to collect voluntary participation consent forms. In addition, health aide staff took on the responsibility for checking the appointment list at each clinic and to check off infants who attended. They also ensured that the "study envelope box" was on site for each clinic that envelope numbers were recorded on the appointment sheet, and that coded envelopes matched the coded number on the appointment sheet at the four-month re-screening appointment. On a daily basis, at both research sites,[5] the participant mothers' code numbers located on the clinic appointment lists were corroborated by the health aides. This procedure helped the health aides to monitor study participants returning for their four-month re-screen.

Third meeting. The third meeting concerned the public health nurses. At this meeting a power point presentation describing the purpose and design of the study was presented. Following the presentation, the responsibilities of the PHNs were reviewed. These included reviewing the EPDS screening scores, completing the PHN two-question survey, and making certain that appropriate referrals were completed for positive screens

[5] The research was carried out at the Health Unit and the Family Resource centre.

on the EPDS. Following the presentation, the team of PHNs were given an opportunity to hold a confidential vote to reject or support the implementation of the study. The unanimous result of the vote was to support the implementation of the study.

A study script was developed and mounted on a poster board that was positioned at the entry to both clinic sites for all potential participants to read (see Appendix F). This script served to acquaint potential study participants concerning the context of the study and highlighted its ethical parameters. Potential participants were concurrently informed that ethics approval had been achieved from U.N.B.C. and Northern Health Ethics Review Boards.

Locating the Study at the Child Health Clinics

At the outset of the study CHCs were held in three locations, one central and two outreach sites at the north and south sections of the city. Following the opening of a Family Resource Centre (FRC) in February 2005, the outreach clinics were closed. This move altered the overall delivery sites for CHCs to the health unit and FRC exclusively.

The Health Unit delivered four half-day CHCs per week with four nurses at each clinic with each PHN working six appointments. The maximum potential for booked appointments per month at the Health Unit was estimated at 370. The FRC offered three CHCs per week with two PHNs at each clinic, each with six appointments. In a four-week period, the maximum potential for booked appointments at the FRC was 144. The overall total capacity for booked appointments between both sites was 514 per month. This number has been determined by combining both birth rate and the number of immunization appointments required for an infant to complete the primary immunization series. The study goal was met as the number of participants was achieved during the

proposed time frame. The start date for this study was determined following the achievement of ethics approval with the Northern Health and U.N.B.C. Further, Northern Health management personal were in agreement with the study start date of January 10th 2005, as were all other involved participant groups.

Data Collection

In Phase One of the study, all new mothers who attended the two-month CHC and who met the inclusion criteria were invited to complete the EPDS and a short demographic questionnaire. The questionnaire was modified for use during the four-month re-screening clinic visit. The four-month questionnaire included questions that had potential for change over the two-month time interval. It also contained a no change column corresponding to each question for ease of response. In addition to the EPDS and the two and four month questionnaire, participants were also asked to respond to a Public Health Nurse (PHN) survey. The PHN survey asked: How would you best describe how you felt about yourself today as a new mother? And, How do you feel about looking after your baby? A five point Likert scale was used to measure the response. The two question qualitative survey was administered by the PHNs at the two and four month CHC visit.

The two-month CHC. All mothers who entered the Health Unit or the FRC for their infants' two month CHC appointments were met by the health aides who informed them of the study and invited their voluntary participation. Mothers were handed the participant information letter and instructed to read the letter and if interested in participating, to sign the consent form witnessed by the health aide. The health aide then handed over a large coded envelope containing the EPDS form and two-month questionnaire. Affixed to the same envelope was a small detachable label with the

identical code number to that on the envelope. This label was detached and adhered to the space adjacent to the infant's name on the appointment sheet, and once this step was completed, the participant mother could be linked via the code number entered into the infants "iphis" file. At the completion of each clinic, the researcher's copy of the appointment sheet with coded numbers affixed adjacent to infant's names and the participant consent forms were sent to the student researcher's office in a sealed envelope. The FRC consents and appointment sheets and study envelopes were sealed and sent to the researcher in a labelled file via inter-office mail.

A master log book was established to record the date of the clinic that the mother signed onto the study, the mother's name, the infant's name and date of birth, the code number associated with the mother and the scheduled date for the four-month re-screening appointment. This master logbook was a critical tool for tracking study participants returning for the four-month re-screening. This logbook was the single source, which directly linked the infant to mother to study code number. This logbook was stored in the locked filing cabinet. It will be shredded with all other study data two years following the completion of the study.

Once the consent forms had been signed, the participant mothers were handed the coded envelope, provided with a clipboard, pencil and a choice of seating in the waiting area to complete the study forms prior to being called in for the clinic appointment with the PHN. Completion of the EPDS and questionnaire took approximately ten minutes, which in most instances was adequate since the public health nurses typically required ten minutes to source the infant's "iphis" file on the database and organize immunization vaccines prior to calling the clients in for the appointment. Therefore, requesting

participants to complete the study forms prior to entry for the appointment with the PHN did not delay the appointment time.

Participants presented their envelope containing the completed EPDS and questionnaire to the PHN who reviewed the EPDS sheet for the score and checked the questionnaire for completion. The coded number on the envelope was transferred onto the survey form by the PHN who in turn posed the two survey questions to the participant. On completion of the survey, the EPDS, questionnaire, and survey forms were placed back into the envelope, which was then sealed. Each public health nurse was responsible to deliver the completed envelopes to the "study envelope storage container" in the researcher's office at the conclusion of clinic.

Every PHN was provided with a research copy of the PHN guidelines (see Appendix G), which were established to guide the action taken in the event of a positive EPDS score ≥ 12. This protocol involved an assessment by the PHN of the participant's emotional state and instructions to the participant to connect with their family physician. In addition, participants were informed that the PHNs would be notifying the family physician of the screening outcome. Furthermore, all of the participants were handed a list of community resources, which served to augment the physician referral.

At the completion of each CHC, a cross analysis was undertaken by the researcher to ensure that all of the envelopes given out to participants were returned. A further check was conducted to ensure that mothers with positive scores were referred to their Family Physicians. In the five cases where study envelopes were not returned, success was achieved in tracking the PHN who had seen the participant. In three of the five cases the

envelopes were retrieved, in the remaining two cases the mothers had departed the clinic with the envelopes and they were not returned.

To facilitate the identification of participant mothers returning to each clinic site, the researcher printed a copy of the clinic appointments every morning prior to clinic and met with the health aide at the Health Unit or called the health aide at the FRC, working that clinic, to assure identification of study codes for that day and to affirm that the health aide had the correct four month coded envelopes ready in the site specific study envelope box.

A weekly email memorandum was sent to the PHNs at both sites which listed the number of booked two and four month appointments for each clinic day. This initiative kept the PHNs current and alerted to the study specific workload. Also included in that memorandum was a continuous update of the number of participant study mothers and the outstanding number needed to reach the targeted sample size.

The four-month CHC. Participants returning for their infant's four-month appointments were identified by the health aide when viewing the researcher's copy of the appointment sheet which had infant names and associated code numbers highlighted in orange. Again, the process was that as the mother was handed her coded envelope, the detachable and identically coded label was removed and placed beside the typed code number adjacent to the infant's name. This was a secure method of inspecting that the accurate code number and envelope was exchanged.

During the four-month re-screening process participants were seldom missed at the "check-in". PHNs added another level of screening when accessing the infant's "iphis" database file as they were promptly alerted by the pop-up file with the associated

study code. This immediately prompted the PHN to inquire about the screening envelope. In cases where the study envelope was missing, the health aide was notified and the appropriately coded envelope was retrieved from the study box and given to the mother. PHNs followed the same process as outlined above for the two month CHCs. Once the four month appointment had been attended, that date was documented in the log book to signify completion and the participant's name was stroked out in orange. The pop-up alerts created on the infant's "iphis" database file were removed electronically prior to the subsequent clinic appointment.

Data Management

All data (results of EPDS, attached questionnaires and PHN survey) was entered on ACCESS and analysed with SPSS. A coding summary sheet describing the variables under investigation, a description of the variables, and variable coding scheme was developed and maintained. All data collected were confidential and only viewed by the research team. All data entry was checked twice to ensure a high level of accuracy.

Hard copies of the completed scale, questionnaire and PHN survey were maintained at the Health Unit in a secure and locked filing cabinet. As soon as the initial data was received, it was checked for accuracy using the following criteria as outlined by Trochim (2001):

- Are the responses legible?
- Are all-important questions answered?
- Are the responses complete?
- Is all relevant contextual information included? (ie. age, education)

Data Analysis

Because this study was descriptive in nature, the quantitative analysis consists of univariate and bi-variate descriptive statistics displayed graphically in figures and tables. The intent of the data analysis is to develop a better understanding of the power of routine screening for PPD. The variables that are reported on include:

a) number of participants

b) age of participants

c) academic background

d) language spoken

e) marital status

f) family income

g) employment status

h) activity of self-care

i) social support

j) planned pregnancy

k) number of children

l) happiness with pregnancy

m) resource booklet use + EPDS scores

n) results of EPDS scores

o) age of baby

p) gender of baby

q) feeding method

r) mother's confidence

s) childcare stress

t) history of depression

Bivariate analyses were used to describe the relationships between the women with positive EPDS and the women with negative EPDS scores and the various independent variables reported on in this study. The bivariate analysis includes frequencies, Chi-square, T-tests, and Spearman's correlations.

Phase Two of Study

The second phase of this study sought to explore the views and perceptions of women whose EPDS scores fell in the positive and borderline range about being screened for PPD at the two and four month CHCs. It also sought to explore the views of the public health nurses on their experience with the screening process.

Focus Group Interview

Focus groups are widely used in health research as well as in other disciplines to gain perspectives, enlightenment, and insight into the minds of participants as they discuss topics of interest to the research (Creswell, 2003). Individuals who participate in focus group sessions are not restricted by the "A, B, C" choices provided by the typical survey researcher (Krueger & Casey, 2000). Participants generally are allowed to say anything they would like to in focus groups sessions. Focus groups therefore, are considered to be naturalistic (Krueger & Casey, 2000). They can provide trustworthy naturalistic data that also lead to important insights about human behaviour, however, as explained by Fern (2001), focus groups are not set up to generalize in the same way as survey research.

Stewart and Shamdasani (1990, p.15) describe the more common uses of focus groups as:

- obtaining general background information about a topic of interest;
- generating research hypotheses that can be submitted to further research and testing using more quantitative approaches;
- stimulating new ideas and creative concepts;
- diagnosing the potential for problems with a new program, service or product;
- generating impressions of products, programs, services, institutions, or other objects of interest;
- learning how respondents talk about the phenomenon of interest which may facilitate quantitative research tools; and
- interpreting previously obtained qualitative results.

According to Stewart and Shamdasani (1990), focus groups should grow directly from the research questions that were the impetus for the research. When formulating questions for the focus group, Stewart and Shamdasani suggest two principles must be considered:

1. questions be ordered from the more general to the more specific.
2. questions of lesser importance should be asked early in the process (build trust and safety of members), while those of a greater significance should be placed near the end (1990, p.61).

Participant Mother Focus Group

The researcher planning for the mother's focus group included background reading on focus group moderating skills, context setting, selection of participants, and

development of a questionnaire or interview guide. Mothers selected to participate in the focus group were individually contacted by phone and given the location and time of the focus group three weeks prior to the scheduled date. A follow-up phone call was also made two days prior to the focus group with all nine mothers confirming their attendance.

Participant Selection. Nine of the 17 mothers whose EPDS scores were greater than or equal to 11 were invited to participate in the focus group (see Table 3.1). The group consisted of three mothers with positive scores at two months, three mothers with positive scores at four months, and three mothers who scored within the borderline range 9 to 11 at both two and four months. The selection process involved drawing random code numbers from the lists of positive scores, which including the borderline group, at two months and four months. Eight of the nine selected participants attended the focus group. The participant that did not show up had a positive score at two months.

Table 3.1

Participant Focus Group (n = 9)

Positive Score at Two Month CHC	Positive Score at Four Month CHC	Borderline Score at Two and Four Month CHC
n=2	n=3	n=3

Data Collection

Two community-based focus group researchers were invited to attend the focus group to act as recorders. This allowed the researcher to focus on moderating the discussion. In addition to flip chart note taking by the two recorders, the session was also audio taped. The focus group questioning guide was built upon the key research findings that emerged from the analysis of the quantitative data.

Lunch was provided prior to the start of the focus group. The participants were presented with a $25.00 honorarium when they arrived at the focus group to cover transportation and childcare costs. A list of community resources was also handed out at the completion of the focus group in the event that an emotional issue arose for participants during the focus group discussion.

The focus group was conversational in nature and framed by the opening invitation to participants to speak openly and freely about how they experienced the screening process. The focus groups lasted approximately two hours, on average. As the principle moderator of the focus group, I was mindful of the role of the facilitation process in relation to the nature and quality of the data collected (Vaughn, Schumm, & Sinagub, 1996). On this note, Charles Basch (1987, p. 415) points out how important it is for the moderator to "create a non-threatening supportive climate that encourages all participants to share views, facilitating interaction among members, and interjecting probing comments, transitional questions and summaries without interfering too brusquely with the dialogue." As moderator, I paid close attention to issues of power and domination by keeping track of who spoke and for how long. I facilitated interaction by inviting each participant to make comments. I also posed probing questions to draw out different points of view. Following the conclusion of the focus group, participants were afforded an opportunity to comment on their focus group experience. Overall, the participants reported that they found the conversation thought provoking and stated that they gained personally from their involvement.

Data Analysis

The process of analysis involved a four step procedure. First, immediately following the completion of the focus group, the moderator and recorders met in a private location to compare notes and identify thematic statements or meaning units that seemed particularly revealing about the experience of mothers with the structured PPD screening process. The researcher completed the session with the two recorders by documenting the thematic statements in a data analysis log book.

Second, the audiotape was later transcribed verbatim within 48 hours. Third, the transcript was read by the researcher several times along with the thematic statements recorded in the log book. Fourth, the transcript and thematic statements were reflected on formulating a list of essential themes. According to van Manen (2003, p. 78), a theme is not a "frequency count or coding of selected terms in transcripts of texts." Rather, a theme is the "experience of meaning" and "at best a simplification" of the summary of the significant factor (p. 87). It is also not an "object one encounters at certain points or moments in a text," but is a way of "capturing" the phenomenon one is trying to understand (p. 87). In describing how themes come to "be," van Manen (2003) explains the "needfulness or desire to make sense," "the sense we are able to make of something," "the openness to do something," and, finally, "the process of insightful invention, discovery and disclosure" (p. 88). It is within this context that van Manen (2003, p. 90) states, that themes "are not objects or generalizations; metaphorically speaking they are more like knots in the webs of our experiences, around which certain lived experiences are spun and thus lived through as meaningful wholes." The thematic analysis was completed when no more new themes emerged.

Public Health Nurse Focus Group

A second focus group was held two months following the completion of the study and included five PHNs. These PHNs were selected based on years of experience, location of worksite and program work related to PPD.

Moderating the focus group. The focus groups were moderated by the researcher. Most scholars agree that moderators are not expected to be experts in the topic of discussion; and if they are, it is important that they do not insert opinions into the discussion (Baker & Hinton, 1999; Krueger, 1998; Vaughn et al., 1996). Probes were used to clarify questions in the groups when members were quiet or not responding. The process included introductions, purpose of the focus group, followed by warm-up questions, which facilitated discussion. Following this brief warm-up period, terms that were used in the group talk were mentioned and clarified, as needed. Participants were informed that their responses are neither right nor wrong. Questions were then addressed and the agenda was followed closely to respect time lines and competing schedules.

Data Collection

Data from focus group interviews are primarily collected in two forms: field notes and written transcripts (Kreuger & Casey, 2000). For this study, field notes were taken by the researcher and two evaluators. Using a flip chart, the moderator had the opportunity to take notes during the focus group while the two co-evaluators used note pads. The focus group discussion was also recorded.

Data Analysis

Data analysis was undertaken immediately following the participant mothers focus group. Each co-evaluator along with the researcher generated a list of themes from

their field notes. The audiotape was replayed to assist in the theme building process. Each evaluator shared their notes to check for group consistency and to build consensus on the themes.

The PHN focus group was facilitated solely by the moderator and drew from the audiotape of the session as well as field notes. After completing a comprehensive review of the audio-tape, the moderator developed a summary report which she sent to all PHN participants and checked in with each one for them validation. All were in agreement of the defined themes.

Ethical Considerations

The proposal for this study was submitted to and approved by the U.N.B.C. Ethics Review Board. All participants were provided with an information letter (see Appendix C) that outlined the process and purpose of the study and warned of potential risks. Participants were assured of the voluntary nature of their participation and that complete confidentiality and anonymity could not be guaranteed because of the number of people involved in the data collection process and possible recognition in the focus group. Participants were also presented with a consent form that was signed prior to their participation in the face-to-face interview (see Appendix D). The participant information sheet stated that women who showed signs of experiencing depression would be given immediate assistance and consultation to connect with their family doctor. The study script (appendix F) further stated that mothers seen to be experiencing thoughts of self-harm or those in her household, would be reported to their family doctor by the PHN. In addition, the PHN guideline (appendix G) specified that in the event a mother refuses to seek assistance, that the attending PHN would initiate contact with her family doctor.

Summary Comments

This chapter demonstrated that the mixed methods used to collect and interpret data in this study were congruent with the philosophical underpinnings of descriptive research. The mixed method approach permitted me to gather and interpret data in a manner that suited both the research question and my theoretical stance towards evidence based practice grounded in the lived experience of new mothers and public health nurses delivering primary are services.

CHAPTER 4

Results

The major objective of this research project was to explore systematic screening for PPD as an evidence-based best practice approach to reproductive health during the postpartum period. The target participant sample size of N=212 for this study, which began on January 10, 2005, was achieved on May 19, 2005. Out of 264 mothers attending the CHCs over this five month period 227 (86 %) met the study inclusion criteria. Of the 37 mothers who did not meet the inclusion criteria, six had significant language barriers, ten had infants that were too old, four infants were brought in by other caregivers, ten were under 19 years of age, one indicated that she was living in lower mainland, and six were due to administrative errors.

Of the 227 eligible mothers, 18 choose not to participate and two were simply missed upon the intake recruitment process. Therefore, of the 227 (86%) eligible 207 (91%) of those mothers voluntarily chose to participate in the study. Furthermore, of the 207 participant mothers who completed the two-month study forms, 190 (91%) continued on to complete the 4-month study forms. Seventeen participant mothers did not complete the four-month study forms for a variety of reasons including: fathers brought infants (n=3), immunization completed out of town (n=2), unknown reasons (n=3), and administrative errors (n=9).

Demographics

The socio-demographic characteristics of participants (n=207) are summarized in Table 4.1 and can be viewed in full in Appendix I. The participants ranged from 19 to 43 years of age with the majority (46.9%) falling between 25-30 years of age. Most (92%)

spoke English as their first language. While fifty-five percent of the participants were married, 30% were partnered, and 11% were single. Household income was reported to be less than $20,000 for 20% of the participants, while 37% reported incomes between $21,000 and $64,000, and 35% reported annual incomes above $65,000. Employment history prior to the birth revealed that 55% had worked full time, while 18% had worked part-time and approximately 22% were unemployed. 62% of participants graduated from high school, technical or trade school, 17% had attained a university degree, and 14% had less than high school graduation. Most (78%) of participants responded to the questions inquiring about the activities they performed to take care of themselves. The single most reported activity which participants engaged in was walking at 46.3%. Under half (48.3%) of participants described having time to themselves; 7.2% indicated that they had time to go out with friend while 23.6% reported having time for more than two activities and 8.1% reported engaging in three activities including reading, listening to music and taking a relaxing bath. Just over half (52 %) of mothers had one child, 34% had two children and 11% and three or more children In terms of the pregnancy itself, 60% of participants revealed that this was a planned pregnancy while 35% it was unplanned and the remaining 5% had no response. More than half (53%) of mothers reported no prior history of depression, 16% reported a history in the last two years, 13% reported having been depressed within the past two-five years, and 13% reported having had depression greater than five years ago.

Results from Two Month CHC

At the two-month CHC, 17 (8.2%) of the participants screened positive and 190 (91.8%) screened negative on the EPDS (see Figure 4.1). While the probable number of

positive scores based on the extant literature was hypothesized to be 13%, there are several reasonable explanations for the resulting lower frequency. Reasons under consideration include: the absence of privacy in the questionnaire setting and with form completion when accompanied by another adult, and readiness to disclose, and an invalid cut-off point.

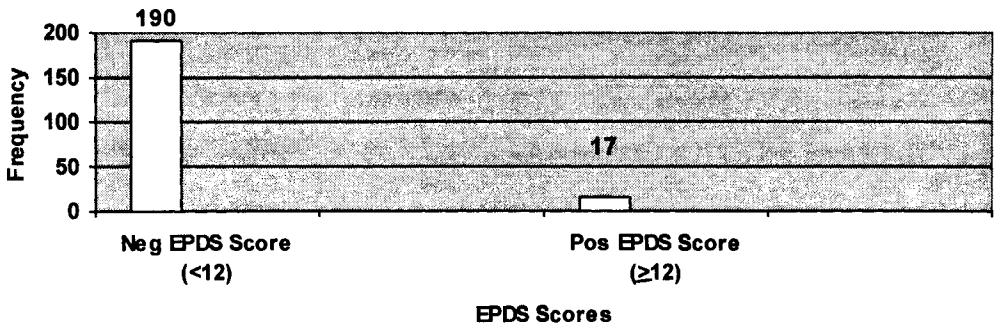

Figure 4.1. Negative (<12) and positive (≥12) Edinburgh Post-natal Depression Scale scores at the two-month child health clinic (N = 207)

Borderline Scores

Although the EPDS has been identified as a valid instrument for use in primary care settings, test scores can fluctuate which raises the issue of people scoring below the identified positive score range who are exhibiting early signs of postpartum depression. The purpose of assigning a borderline category was to ascertain the frequency of occurrence of borderline scores relative to the positive scores. Borderline scores were defined as those scores between nine and eleven on the EPDS. Consequently, three categories of scores were calculated (see figure 4.2).

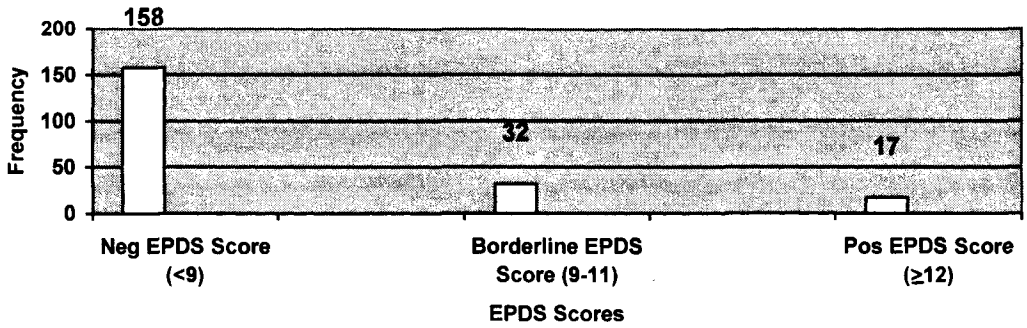

Figure 4.2. Negative (<9), Borderline (9-11), and Positive (≥12) Edinburgh Post-natal Depression Scale Scores at two-month Child Health Clinics (N = 207)

Within these three categories, 158 (76.3%) participants had negative scores, 32 (15.5%) participants had borderline scores, and 17 (8.2%) participants had positive scores. It is possible to speculate that a percentage of the participants who had borderline scores could potentially be experiencing depression, but are not detected with the defined cut-off score on the EPDS.

New Positive Cut-Off for EPDS Scores

On examination of the borderline scores a further analyses was structured to reset the cut-off score marking the boundary between positive and negative. The intention of this new grouping was to account for potential bias as the critical identifying number was on the screening sheet. Further, and according to Cox and Holden (2003), a cut-off of 9 or 10 is likely to identify most cases of depression when the EPDS is the single measure for first level screening. The new cut-off scores revealed that 158 (76.3%) of participants had negative scores while 49 (23.7%) of participants had positive scores. A 23.7% positive rate surpasses the cited rate of PPD in the literature at 10-20% (see Figure 4.3).

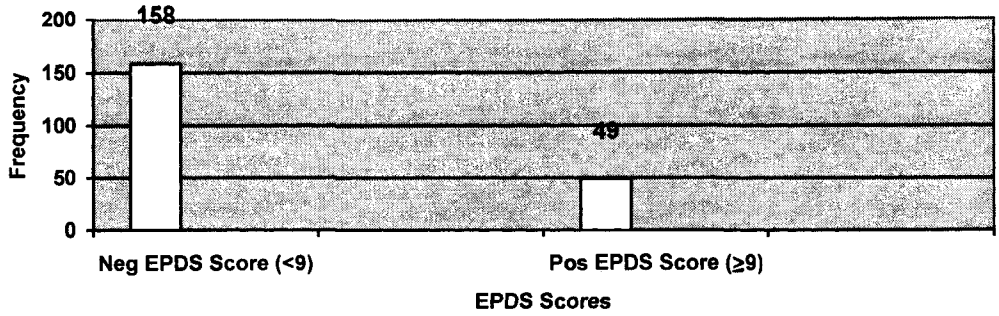

Figure 4.3. Negative (<9) and Positive (≥9) Edinburgh Post-natal Depression Scale Scores at two-month Child Health Clinics (N = 207)

Spearman Correlation between EPDS Scores and PHN Survey Scores at Two Months

Correlations provide an analysis of a relationship between two variables and the strength of that relationship. Spearman's correlation was selected to address concerns about whether the variables were evenly distributed and whether the sample size was adequate. Categorical classifications of correlations serve to specify the specific strength of the relationship, a small relationship reflects correlations between 0-0.33, a moderate relationship reflects correlations between 0.34 to 0.66, while a strong relationship reflects correlations of 0.67 and greater (see Table 4.2).

Table 4.2

Spearman Correlation Between EPDS Scores and PHN 2Question Survey Scores at Two months

	1	2	3
1. EPDS	--	**0.306****	**-0.468****
2. PHN- Confidence		--	
3. PHN- Anxiety			--

** Correlation is significant at the 0.01 level (2-tailed)

Table 4.2 illustrates that there was a small, but statistically significant correlation ($r=306$, $p<0.01$) between EPDS score and the confidence level of new mothers. There is also a moderate, but statistically significant negative correlation ($r=-.468$, $p<0.01$) between the EPDS score and a mother's anxiety with baby care.

Positive and negative EPDS scores at two months. Pearson's χ^2 was done to explore relationships between the demographic variables and the presence or absence of a positive screening score. All of the following variables were not significantly different between these two groups; age, education, marital status, socio-economic status, employment history, resource booklet EPDS, gender of infant, feeding type for infant and participant visit accompaniment (see Table 4.3 illustrated in Appendix J). Significant Chi-square results are listed in Table 4.4.

Table 4.4

Pearson Chi-Square Results

Variable	Chi-sq. Value	Sig.	Alpha
Regular exercise	5.058 [a]	0.025	.05
Time to self	5.453 [b]	0.02	.05
Planned Pregnancy	3.937	0.047	.05
Mood in Pregnancy	8.807[c]	0.032	.05
History of Depression	14.452[d]	0.002	.05

[a] indicates 1 cells have an expected count leas than 5
[b] indicates 1 cells have an expected count less than 5
[c] indicates 2 cells had an expected count less than 5.
[d] indicates 3 cells in calculation had counts less than 5

These results indicate that women who exercised regularly and who had more time to themselves were less likely to have positive EPDS scores. Women who were more

likely to have a positive EPDS score at two months were those mothers who did not plan the pregnancy, were not happy during the pregnancy and had a history of depression.

Positive and negative EPDS scores at two months. T-tests were executed to compare the mean value of the independent variables within each of the two groups, mothers who screened positive and mothers who screened negative. Non-significant results are illustrated in Table 4.5 (see Appendix L) and significant results shown in Table 4.6 below.

Table 4.6

T-tests Results

Variable	T-test	Sig.(2-tail)
Number of minutes for self	-2.385	0.018
People to talk to	2.041	0.043
Parity	-2.952	0.004

Significantly different ($p<0.05$)

These results indicate that women who had positive EPDS score had less time to themselves. Women with positive scores had fewer people to talk to, and had fewer children, on average, then did women who had negative EPDS scores. The exhaustive results can be viewed on table 4.5 in appendix L.

Results from Four-Month CHC

At the four-month CHC 181 (95.3%) of participant mothers (n=190) scored negative while 9 (4.7%) scored positive on the EPDS (see Figure 4.4).

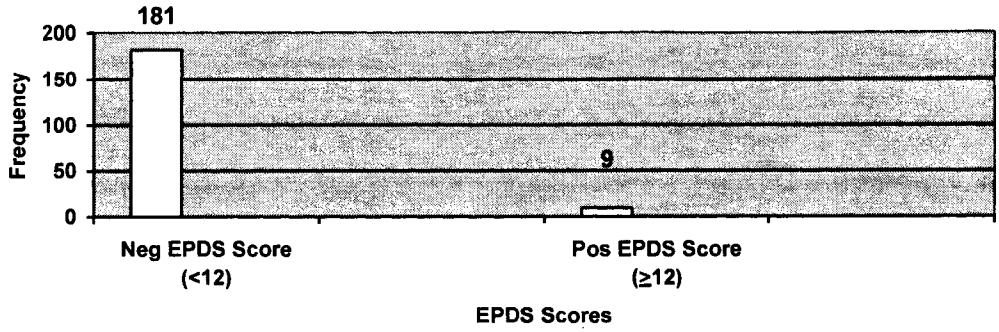

Figure 4.4. Negative (<12) and positive (≥12) Edinburgh Post-natal Depression Scale scores at the four-month child health clinic (N = 190)

Borderline Scores

Borderline scores were analysed again at four months and these results can be seen in Figure 4.5 below. Twenty participants (10.0%) had borderline scores at the four-month screening, which was a (5%) reduction from the two-month screening.

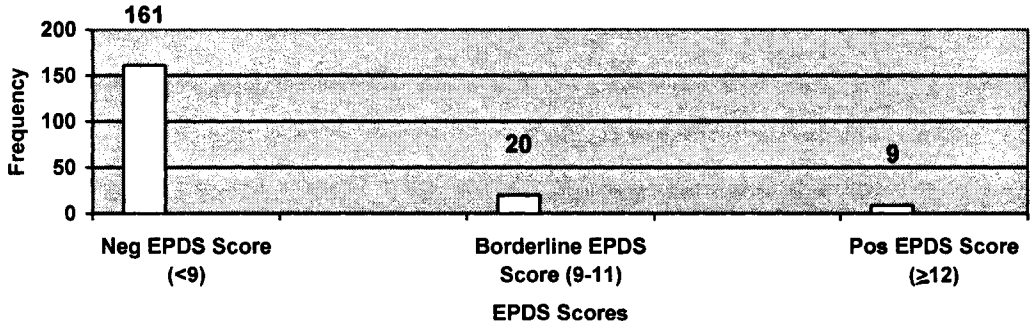

Figure 4.5. Negative (<9), Borderline (9-11), and Positive (≥12) Edinburgh Post-natal Depression Scale Scores at four-month Child Health Clinics (N = 190)

New Positive Cut-Off for EPDS Score

The new positive cut off of nine on the EPDS was analysed again at four months to consider for potential response bias. What remains of interest is that there is a slightly higher percentage of participants scoring negative at four months (80.3%) than at two months (76.3%). Further, while 23.7% of participants scored positive (≥9) at two months, at four-months the new cut-off reveals that 15.0% of participant mothers scored positive

within the new cut-off score of nine. Continued screening at the four month interval remains paramount (see Figure 4.6).

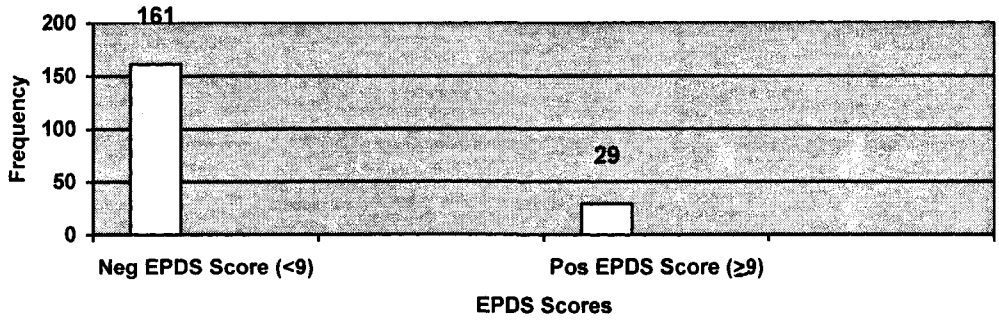

Figure 4.6. Negative (<9) and Positive (≥9) Edinburgh Post-natal Depression Scale Scores at four-month Child Health Clinics (N = 190)

Spearman Correlation between EPDS scores and PHN survey scores at Four months

The four-month EPDS screening based on cut-off score of 12 revealed a moderate and significant correlation ($r = .455$, $p < .01$) with maternal confidence (see Table 4.7). This indicates that mothers with higher EPDS scores have lower levels of confidence as mothers. Meanwhile, a small but significant correlation ($r = -.382$, $p<.01$) was observed between mothers positive EPDS score based on cut-off of 12 and anxiety about infant care. The more negative the anxiety score the higher the EDPS score, indicating that mothers with higher EDPS scores have more anxiety with infant care.

Table 4.7

Spearman Correlation Between EPDS Scores and PHN 2Question Survey Scores at Four-Months

	1	2	3
1. EPDS	--	**0.455****	**-0.382****
2. PHN- Confidence		--	
3. PHN- Anxiety			--

** Correlation is significant at the 0.01 level (2-tailed)

There were no significant Pearson Chi-square results between the presence or absence of positive EPDS scores and categorical independent variables at four months.

T-test results revealed only one significant difference between women with positive and negative scores on the number of people they had to talk to ($t=1.912$, $p=0.057$) . A complete summary of results at four-months can be seen in tables 4.3 and 4.5 and viewed in full in Appendix J and K.

Results from Focus Groups

The findings are presented for each of the two focus group interviews. Findings from mothers representative of the mother's focus group is presented first, followed by the findings from the public health nurse's focus group.

Participant Mothers Focus Group

In order to grasp the basic experiences of mothers with routine PPD screening at two and four month CHCs, mothers who screened positive or in the borderline range were interviewed Emphasis was placed on a critical examination of the experience of screening for PPD for participants. This was accomplished by completing a thematic analysis of the focus group interview. The focus group discussion was guided by two probing questions. The first question explored how participants felt about screening for PPD at child health clinics. The second question asked participants to provide feedback on the effectiveness and usefulness of the questionnaire.

Extracts from the transcribed text and flip chart note have been selected to illustrate each theme including any differences of perspective or nuances within them.

Question # 1: "How Do You Feel About Screening New Mothers About Their Emotions During The Child Health Clinics?

Five themes (see Table 4.8) were revealed by the data generated by the first question. For the purpose of illustration, the themes have been separated. However, each theme is an aspect of the experience that is linked with and dependent on the other themes.

Table 4.8

Essential Themes: Experiences of Mothers with Routine Screening for PPD

Essential Themes	Thematic Statements
Sense of safety	safe place; not a judgemental standpoint; you feel better about being honest and truthful; get help without having to ask for it; at CHC it is a good focused time; CHC is a good setting for doing this screening.
Sense of care	they took a lot of time with me; happy to see that something is being done, that it mattered; it's nice that someone does want to hear about it....that someone cared, it meant a lot; it felt good to have someone pay attention to those questions.
More time to talk	I wanted to have more time to talk...I felt it was kind of rushed; If the nurse talked to you after (baby) had the needle....you have to wait for a few minutes anyways; you kind of feel like the rug has been pulled out from under you....your just there by yourself; they took a lot of time with me actually...I was really lucky. Lots of time was spent that way so, I was very comfortable and had good experiences...done the questionnaire before the vaccination, have (baby) get the vaccination, then go talk to the nurse about the questions; it was better to have it before ....after (baby) got the shots, I wanted to be with him.
Paternalistic attitude of partners	I'm basically looking after kids, taking care of the house, driving around lots, cooking the meals and making sure the kids have homework done...bath time and bedtime and then I'm tired...I just want to go to bed; he goes to work all day and you're still doing all the stuff you named even if you're not a single mother.....he comes home and you're pretty much

	looking after him too but people don't think of it that way....they're like ...you have him to help. He'll help me when he feel like it....when we get visitors he takes the baby and carries the baby around and I have "your so lucky to have a guy to help you out" ...I'm like, oh ya....I don't have the heart to tell them he is just doing that to show off; and it's just like her husband, " what did you do all day?"; sometimes he'll come home from work and I think he thinks that I sit on the couch all day.....so he'd come home and he was like, so how many boxes did you get unpacked today?...and I'm like pardon, they forget that ya not just unpacking boxes, just watching baby...; when you're single, you get more attention ..I know my parent are more inclined to help me because I don't have any help, I don't have any perceived help of husband, boyfriend or live-in partner...So, they're inclined to help me, friends of the family are more inclined to help me...you know what I mean.....I can understand what she is saying.
Lack of support from Doctors	Doctor's don't explore beyond "I'm fine"...male doctors don't know...had to switch Dr. for pregnancy and liked that Dr. but wasn't allowed to stay with him, he understood my pregnancy my regular doctor didn't know how I was feeling and I just didn't care to tell him as he hadn't been there in the pregnancy; Don't see Dr. after the initial postpartum visit....Child Health Clinic is a good setting for the screening.

Sense of safety. The opening question initiated discussion concerning the safe environment of child health clinics. It was perceived as a place where mothers' could disclose feelings without fear of humiliation or embarrassment. Comments made by participants include:

> *I think it is a safe place to tell how you're really feeling. Because lots of times you don't want to tell your husband and your mom because you feel that maybe you're not doing as good a job as you could be.*
>
> ***
>
> *...for me, it was a safe place to say, you know, that I'm not doing so good.*
>
> ***

...sometimes you feel like everyone's judging and watching you and its kind of nice to know that maybe other people are feeling the same way you are.

***

...it's kind of nice to know that not everyone is having a walk in the park.

***

When it comes from a medical standpoint, not a judgemental standpoint, which makes you feel better about being honest and truthful because you know it's to help you, not to judge you or anything.

These comments reveal the prevailing societal expectations that a new mother should inherently be happy. These unspoken and deep rooted cultural values do not reflect the reality of the challenges some mothers face in the scope of their transition to the role of motherhood. The perpetuation of this mode of thinking undermines the ability of some mothers to tell their true feelings. However, in the presence of public health nurses, the environment was perceived as safe for mothers to talk honestly about how they are doing.

Sense of care. In exploring and describing their experiences, all of the participants spoke about feeling a sense of care.

They took a lot of time with me actually. I'm not saying that it didn't upset me when they said maybe I should talk to my doctor, but they took the time so, I was very comfortable. I was just happy to see that something was being done; that it mattered.

***

It's just nice that it matters...that if you were just having some things that to most would seem very insignificant but very big in our live at this point and that someone wanted to know about it and that it mattered.

***

It's nice where someone does want to hear about it. It was nice that someone cared; that meant a lot.

***

It felt good to have someone pay attention to those questions.

Caring as a construct is fundamental to the nursing profession with nursing care being descriptive of what nurses do. Public health nurses inherently reveal their unbiased sense of caring through their daily practice. This prevailing attitude is clearly communicated with new mothers' and therefore, aides in facilitating the construction of a setting where mothers feel they will be heard and their statements will be valued. Mothers expressed their open appreciation for having a valid sounding board with the nurse to iterate their feelings. Public health nurses who spent time with the mother discussing her feelings conveyed the message of unconditional caring for what these mothers were experiencing.

More time to talk. The third theme that emerged from the data was termed "more time to talk". Many of the participants spoke about how the experience of completing the EPDS at the CHCs opened up a whole new level of awareness about having someone to talk to about their feelings.

I wanted to have more time to talk to the health nurse. I felt kind of rushed. Once I had done it and they (PHN) reviewed it, it was like, oh, maybe you're not feeling so good, maybe you should go to talk to your doctor.

***

It would be nice to have a little more time to talk to somebody. I just found that they were in a rush to get through their day too.

***

One participant talked about the competing agendas of wanting to focus on the child's needs and feeling guilty about using up this time on herself:

It's a combo, you're there for your child—your child's getting shots and you're totally concerned with that and then to have them ask you personal questions on top of it—it's hard to think about yourself too.

While screening for PPD at CHC places additional demands on PHNs, (i.e., public health nurses are required to immunize infants while they simultaneously addressed the EPDS screening scores of mothers), the benefits for the mothers are difficult to dismiss. Discussion concerning when would be a better time for public health nurses to talk to the mothers about their emotions during child health clinics revealed a range of preferred choices.

I think it would be nice if the nurse talked to you after they give the needle because we have to wait for a few minutes anyway—that would give us a chance to talk with the nurse.

***

I think if I'd done the questionnaire before the vaccination then went to talk to the nurse about the questions that would have been better.

***

I think after my baby got the shots I was more, wanted to be with him. So, for me, it was better to have it before.

Paternalistic attitude of partners. The fourth theme that emerged from the data was the paternalistic attitudes of the participants' partners. One participant commented:

When my baby was born and having to deal with the other kids, doing the household chores, cooking, and everything else on top of that, it was too overwhelming for me, it was too much. Because I had a c-section the doctor told me not to lift anything heavier than baby, no driving or anything. I'm basically taking care of the house, driving around lots, cooking the meals and making sure the homework is done and everything by 8 or 9 pm I just want to go to bed, I'm tired. He'll help me out when he feels like it. When he comes home, he wants to relax. When we do get visitors he takes the baby and I have "your so lucky to have a guy to help you out" Actually, I don't say nothing at all and he just drinks it all in. I don't have the heart to tell them he's just doing that to show off, but that's how it is for me, I just let it slide, even though it irritates me and annoys me.

***

While he's at work everyday and just because you're still going out with him, doesn't mean that he does anything. He goes to work all day and you're still doing all the stuff that you just named even if you're not a single mother. Then he

comes home and you're pretty much taking care of him too. But people don't think of it that way,.

***

I swear sometimes he'll come home from work and I think he thinks I sit on the couch and watch TV all day. They forget that maybe when you look around the house, it doesn't look like a lot but it's not just unpacking, just watching baby.

Prevailing paternal attitudes of partners lead to a dismissal of understanding to the workload issues of a new mother. Continued perceptions that there should be a balanced or equal distribution of labour was overwhelming these mothers to the point where they shut down communication. Mothers recognized that partners did not get the message; they could not comprehend the extreme challenges this new role of motherhood was imposing upon them and its consequences.

Lack of support from Doctors. The fifth and final theme that emerged from the data was the experience of participants with their doctor in the postpartum period. For example, one participant indicated that:

***

Doctor's don't explore beyond the "I'm fine" reply.

Another participant spoke about her fear in speaking to her doctor:

I had to switch Doctor's when I was pregnant, I liked the doctor while I was pregnant but wasn't allowed to switch permanently. My regular doctor didn't know how I was and I didn't want to tell him as he had not followed me in the pregnancy.

This final statement summarized the general attitude of all of the participants concerning their doctors:

I think the child health clinic is a good setting for the screening, better than the Doctor's office, I haven't been back there since my initial postpartum visit.

The participants seemed to be affirming that the exploration of their emotional health was limited and did not extend past their accommodating reply of fine. There was also the issue of physicians who did not do deliveries and who therefore handed over their patients to a physician who had delivery privileges. This physician would follow the mother through the pregnancy and up to 6 weeks postpartum at which time the mother and infant would be transferred back to the attending care of the family physician. Mothers who endured this transfer of function to other attending physicians, had a fragmented perception of the family physician's true interest in their emotional health. Thus, these mothers chose to remain silent despite their need for emotional health support on transferring to their primary physician.

I found the thematic analysis of the borderline and positive score focus group to be very helpful in shedding additional light on the participants' experience of undergoing routine screening for PPD. The findings also demonstrated that the practice of reflection was both powerful for developing personal insight into one's lived experience and an effective tool for revealing the totality of the participants' experience with PDD.

Question # 2: What Do You Think About The Screening Questionnaire That Was Used?

Six themes (see Table 4.9) were revealed by the data generated by the second question.

Table 4.9

Essential Themes: Experiences of Mothers with Screening Questionnaire

Essential Themes	Thematic Statements
Reliability	Good thing, catch people who may slip through the cracks; was in the booklet but forgot; recalled seeing it in the booklet but wouldn't necessarily use it on own; It's important to not just check at 2 months because sometimes postpartum comes 6 months later, so it's important to have intervals; important to keep checking back because your life changes;
Validating	Overwhelming guilt about anything I did for myself; found myself crying and apologizing a lot; felt needed a legitimate reason to be away from baby, then its okay;
More of a focus on self care	Need to be okay to take time; doing everything except for yourself; time for yourself; better mom when take care of yourself; important that mom's have time for themselves…offer as moms can't always ask; new moms need to understand that self-care is important;
Don't want to know on their own	Please don't put the critical numbers on the sheet….influences score; missed some questions on purpose by seeing your score & what it means, you know there will be consequences, better to have nurse explain score;
Fear of label and consequences	knew what I had to get for a score so people wouldn't think I'm crazy…..influenced by results; scared there would be consequences like being put under a microscope; fear that they may take my kid away; admitting I have a problem.
Lack of understanding by partners	The first time I did it I was by myself, the second time I was with my husband …….I didn't want to alarm him at all…I kind of led that I was feeling better than I actually was; I would have to agree…..same with my husband, the first time I went, I changed my answers based on the fact that he was sitting there; nothing out there to help them understand.

Reliability. Participants were in agreement that the current self-administered approach to PPD screening where mothers are presented with a resource booklet upon visitation by a PHN, was not likely to happen. One participant said:

Think no one cares, it is good if someone takes the time to ask how you're doing.

Other participants acknowledged receiving the resource booklet with the PPD screening tool contained in its pages but had forgotten it was there. So, in this case they

would not have known to resort to this booklet for the screening tool. Others remarked that despite its availability to them, there was a distinct possibility that it would not be implemented.

It was in the booklet received but I had forgotten.

***

I recall seeing it (self-administered PPD screening tool) in the resource booklet but wouldn't necessarily use it on my own as there is too much going on.

Applying a reliable method for PPD screening will serve to close the gap among women who are currently being missed. Mothers who are slipping through the cracks are subject to the risk of missing timely referrals to mental health services.

Child health clinic is a focused time, you are focused on you and baby, and have a clearer picture, it is a good time to do it.

***

Good thing—can catch people who may slip thru cracks, let mom know you care.

A further testimony to the benefits of EPDS screening in the CHC setting is the capacity to screen at more than one interval of time. Re-screening for PPD has particular significance as this spectrum disorder can occur anytime within the first year following birth. Mothers were aware that the significance of ongoing screening is a good thing as life events can turn a mothers' world around immeasurably. Thus, when feeling fine at the two-month child health clinic it may not necessarily be true for the four month screening during child health clinic.

I think it's important to keep checking back because your life changes, your feelings change, so it was helpful for me to see the growth, at two months when I

got asked those questions, I started bawling and I thought I'm falling apart. And at 4 months, it was like I'm getting better. It made me feel better about myself and I'm feeling better about my responsibilities.

***

So much happens in those couple months, with them, with you, so it's definitely easier to keep it, sure.

***

...some mothers feel really good at two months and by 4 months, they're starting to not feel so good about themselves anymore. So it's important not to just check at the 2 months, you're doing fine so forget about it. Because sometimes postpartum comes 6 months later, its' important to have intervals.

Validating. Mothers experienced the pressures of their new role when they had an overwhelming need to justify their personal time or time away from baby. It was perceived that being absent from motherly responsibilities was acceptable if it was for reasons other than those of a personal nature.

Felt overwhelming guilt if do thing for myself.

***

I found myself crying and apologizing a lot for taking own time.

***

Had time away from baby for reason felt was valid.

More of a focus on self-care. The concept of self-care emerged as a need for new mothers upon their recognition that to be more effective in this new role, time-out would be vital. The job description of mother has no timelines, no boundaries and no regulation.

From the outset of this new role, mothers need to give permission to them to take personal time. It was acknowledged that personal time would lend itself to an enhanced performance in the role of mother.

New moms need to understand self-care is important.

***

You're a better mom when you take care of yourself.

***

Worst thing you can tell a mom is your selfish...doing everything except for yourself...you need to be you.

***

important that mom's have time for themselves so offer, we can't always ask.

Don't want to know on their own. The EPDS screening tool handed out during the CHC was identical in format to the copy found in the Maternity Home Visiting Resource Booklet. The decision to utilize the same copy was for purposes of consistency. This copy included the possible range of scores, identifying the demarcation of a positive score. When a positive score was attained, mothers were advised to connect with support serves immediately. Self-recognition that one's score was greater than that within the normal limits in some cases lead to altering of score totals. For example, one participant said:

Please don't put the critical numbers on the sheet, it influences score.

Other participants agreed adding:

I missed some on purpose.

***

Seeing what score will be you know there is going to be consequences.

***

Better to have the nurse explain the score.

Fear of label and consequences. Positive EPDS score results struck a fear among these new mothers. This generated a series of unfounded thoughts about the outcome of their status as a mother. Mothers were worried about societal application of a label and further about the consequences for their infants. A preferred approach to conducting the EPDS screening during CHC would be to have mothers complete the form and hand it over to the public health nurse for scoring and consultation.

I knew what I had to get for a score so people wouldn't think I'm crazy.

...influenced by results, don't put scores on the questionnaire.

***

I was scared there would be consequences. That I would be put under a microscope.

***

I feared that they'd take my kid away.

***

New moms are struggling and trying their best and how could I be a sad mom when this is all I ever wanted?

To neutralize the feeling of fear while completing this tool it was suggested that mothers could be supported differently thru comments which resonated the element of caring.

Tell them its for your personal benefit, to help you go through some of the changes in your life, not to critique you as a parent. The nurse can tell you this when they give you the questionnaire.

Lack of understanding by partners. Sheltering true emotional feelings from one's partner was a common theme. Mothers felt a need to conceal what they were experiencing for reasons that their partners lacked insight into understanding. When partners where present at the CHC with mothers the scoring on the EPDS tool was influenced.

...when I first did it, I was by myself and the second I went in for shots, my husband was with me and just because he was so concerned about it, I didn't want to alarm him.

***

I kind of let on that I was feeling better than I actually was.

***

I would have to agree, same with my husband, first time I changed my answers based on the fact that he was sitting there. God forbid that he found out that it wasn't going as well as.

***

There is a gap for partners, nothing out there to help them understand.

PHN Focus Group Findings

The purpose of the PHN focus group was to explore the perceptions of the public health nurses about the using the CHCs as a setting for routine screening for PPD. Similarly to the participant focus group, the PHN focus group was guided by two probing

questions. The first question explored how PHNs felt about using the two and four month child health clinics as an effective approach for screening for PPD. The second question asked PHNs to provide feedback on their experience with the research study.

Question # 1: "How Do You Feel About Screening New Mothers About Their Emotions During The Child Health Clinics?

Five themes (see Table 4.10) were generated from the first question.

Table 4.10

Essential Themes: Experiences of Public Health Nurses with Routine Screening for PPD

Essential Themes	Thematic Statements
Brought the issue to the surface	I think it worked well, prior to, we weren't doing anything to detect emotional health of mothers; The tool gave them an idea of what they should be knowing to look for; I think it worked well because a few moms who scored quite high on here wouldn't have been helped; I don't know if they were in denial or they just hid their feelings...but you couldn't tell just sitting talking about immunization with them; Having the tool, they realized "oh my goodness, I never even thought that there was something that wasn't normal...or I shouldn't be feeling this way; This tool is very good in that it validates what a lot of women are feeling.
Need for privacy	I can see it being a little problem though, if women think that they'll be discussing it and everybody will be hearing about it....they may not be as honest about it on here as they would if they knew they were going to discuss it with a nurse in a more private area; there are loud noises all around you and your just feeling tense; it's not a comforting area to let your guard down; It would have been really interesting to see what women would be like in private rooms, to see their answers because in the auditorium they could hear the other mothers being questioned. I think some of the numbers could have been different. I had one mom who was severe and she attended the clinic with her partner and I had to ask him to leave the room for me to talk to her privately; I just felt she had answered the questions without understanding what she was answering...so I had to go over it with her...and it got bigger and bigger ...she revealed a lot of information to me at that time.
Potential influence of the visible rating score	For people who are trying to act like everything is just perfectly fine, it might make them subconsciously more honest to not see the score ....they would not be trying to avoid trying to score 12

	or more; I like the idea of having the score there; I'm not sure....as a lady admitted to hospital for having severe thoughts about herself and baby scored zero on this tool; I wonder if it would have made a difference if this was taken off; I mean, by looking at this you can tell what sort of is a normal reaction. Your only going to get the answers they want to give you...if there not ready to share they they're not going to share no matter what....in their heart they may be a three but on paper they may be a zero.
Dedication of time requirement	There in such a rush, so much paper work; They either haven't started or trying to finish and not a lot of thought went into the questions, so in order to move forward they needed to complete it so you give 5 minutes and then go over the questionnaire; If we are going to be screening at the two months then we should look at extending the appointment time. It's too bad we couldn't incorporate it in the 15 minutes wait time; What about a specific nurse to screen in a private room?; I think you would get more honest answers and you'd have more comfortable women...its more peaceful for them because their babies are not crying, they have not been immunized yet; I think it would be a good way to use the 15 minutes;
A level of uncertainty in dealing with PPD	It would be nice to have someone from mental health to come and do that because they would know the next step to take, whereas we would refer them to that person. If your going to do it, you want to do it right...you don't want to do if off the side of your desk....and that's what I feel it would be, because there's already so much your doing...it would be a real benefit if we could work something like that out; When I realized I had a mom who scored high and she didn't want help because she thought there was something wrong with her and she didn't want it....it seems like your poking your nose into someone else's business...I did eventually convince her that I needed to talk to her doctor and she needed to talk to her doctor. .it was rough as I really felt like everybody has their own level of what's okay and I guess I felt like she was dealing with it, no matter what the score was. ....so, I really had to fight with myself about what was right and what I had to do as a nurse but that was difficult for me as she was really upset.

Brought the issue to the surface. This first theme was a defining moment for Public health nurses as they where quick to reveal that utilizing the CHC immunization appointment to conduct the EPDS screening was an opportune time. It further served to

define the case for screening during these intervals of time as they acknowledged that it was likely not being done on a routine basis thru family physicians postpartum visits.

I think it worked well, prior to this we weren't doing anything to detect the emotional health of mothers.

***

I think it worked quite well, because a few moms who scored quite high on here that you wouldn't have known just sitting, I don't know if they were in denial, but you couldn't tell just sitting talking about immunization with them.

***

I think doing it at CHC worked really well, moms didn't really have any idea what they could be looking for or what they should be noticing about emotional health; doing the tool gave them an idea of what they should be knowing.

Another PHN remarked about the opportunity provided with the use of the tool for new mothers, it serves to validate what they may very likely be feeling: *"were not hiding things under the rug anymore"*. This statement further infers that the nurses are not bypassing the issue, but taking it into the practise setting and approaching the mother's emotional health issues as a critical piece of the holistic health model.

Need for privacy. This second theme identified by the PHNs gave rise to the importance of the provision of a setting which was conducive to disclosing emotional health issues. Interestingly, PHNs working in the setting with private offices were confident that it enhanced the opportunity for conversation with the new mother while PHN's working in the open auditorium setting with dividers between work stations acknowledged that privacy was an issue and often comments from the adjacent station

could be heard. PHNs were concerned that this may have influenced the opportunity for disclosure of a new mothers' true emotional health status.

I can see it being a little problem though, if women thinking they'll be discussing it and everybody will be hearing about it, they may not be as honest about it on here as they would if they knew they were going to discuss it with a nurse in a more private area...there are loud noises all around you and your just feeling tense...it's not a comforting area to let your guard down

***

It would have been really interesting to see what women would be like in private rooms, to see their answers because in the auditorium they could hear the other mothers being questioned, I think some of the numbers could have been different

***

It was really nice to sit in the private office

Despite not having a private setting to conduct the screening, PHNs working in the auditorium setting recognized the ethical implications inherent in not pursuing the screening routinely with these mothers and resolved that the process would likely identify some mothers being challenged.

***

It would definitely be an advantage to have it done in a private setting, but we don't have that choice in the auditorium. It is still a good thing to do even if we don't have the privacy as your going to get some, you may not get as many but your still going to get some.

Privacy as a theme also extended to being alone with the nurse during the screening process. PHNs were astute in identifying that the presence of one's partner may influence full disclosure with the mother in the CHC setting.

***

I had one mom who was severe and she attended the clinic with her partner and I had to ask him to leave the room for me to talk to her privately....I just felt she had answered the questions without understanding what she was answering...so I had to go over it with her...and it got bigger and bigger ...she revealed a lot of information to me at that time.

***

I had one mom who scored fairly high and the guy was just like" oh, she's just fine and the mom was trying to tell him,

no its more than that".

***

...when she came in and she went over her score when I looked at it ...and then talking to her, she was contradicting herself, so the written word compared to the verbal word was different and the difference was that the partner was there;

.keeping mom in the room for a few extra minutes and I had the partner leave with the baby and was then able to validate what was on the written paper instead of what she was verbally saying.

Potential influence of the visible rating score. This third theme related to the fact that the identifying positive score for the EPDS screening was printed on the screening

tool sheet itself. The concern under discussion by the nurses was whether this was best practice to have the score visible to the mothers as it may lead to response bias.

***

For people who are trying to act like everything is just perfectly fine, it might make them subconsciously more honest to not see the score, they would not be trying to avoid trying to score 12 or more.

***

I'm not sure....as a lady admitted to hospital for having severe thoughts about herself and baby ...she scored zero on this tool...I wonder if it would have made a difference if this was taken off....I mean by looking at this you can tell what sort of is a normal reaction.

Other insights were that screening tools were only valid when a mother was truly ready to disclose regardless of what the form may say. In this case, it is suggestive that the mother has the control to reveal or not to reveal as she will also understand that there will be consequences relative to her scoring positive.

***

...you're only going to get the answers they want to give you...if they are not ready to share then they they're not going to share no matter what....in their heart they may be a three but on paper they may be a zero".

Finally, one other PHN adds her comment without explanation.

I like the idea of having the score there

Dedication of time requirement. The element of time surfaced repeatedly with the PHN's specifically because the CHC are designed to flow within a set time frame. Thus,

with the addition of screening and possibly dealing with a mother who scores positive, which requires the initiation of a referral, this offsets the time frame adding to the stress of workload and productivity. Nurses had a wide range of ideas as to how the screening might be conducted alternatively.

...there in such a rush, so much paper work...they either haven't started or trying to finish and not a lot of thought went into the questions~ so in order to move forward they needed to complete ...so you give 5 minutes and then went over the questionnaire ...not all times ..but in the auditorium you noticed books and the back up... if we are going to be screening at the two months then we should look at extending the appointment time.

***

It's too bad we couldn't incorporate it in the 15 minutes wait time.

***

I think it would be a good way to use the 15 minutes after

***

What about a specific nurse to screen in a private room, dental room ~I think you would get more honest answers and you'd have more comfortable women...its more peaceful for them because their babies are not crying, they have not been immunized yet...

Other suggestions to deal with the competing time requirement included a deferral of follow-up for positive screening mothers. However, such practice gave rise to ethical issues with the nurses.

Instead of doing the nurse client thing where you don't have confidentiality...there could be a phone call to them ...like to have a visit...come to the home or the health unit

***

Ethically, it would be hard for me not to address something at that time.

***

I feel when you opened it up let's carry it on, when she gets home it's not going to be the same

***

At the same time is the best time

A level of uncertainty in dealing with PPD. The fifth theme underscores the importance of training PHNs to be prepared to handle the critical role they play as front line health professionals with identifying the emotional health of new mothers. While some nurses believed that the allocation of time was warranted to do the work effectively. Others suggested that there is a hierarchy of priorities for workload and that this issue could be handed over to the experts.

***

...it would be nice to have someone from mental health to come and do that because they would know the next step to take, whereas we would refer them to that person....

***

If your going to do it, you want to do it right you don't want to do if off the side of your desk....and that's what I feel it would be, because there's already so much your doing...it would be a real benefit if we could work something like that out

***

When I realized I had a mom who scored high and she didn't want help because she thought there was something wrong with her and she didn't want it....it seems like your poking your nose into someone else's business...I did eventually convince her that I needed to talk to her doctor and she needed to talk to her doctor...it was rough as I really felt like everybody has their own level of what's okay and I guess I felt like she was dealing with it, no matter what the score was. So, I really had to fight with myself about what was right and what I had to do as a nurse but that was difficult for me as she was really upset.

Question # 2: What Were Some of Your "Most Salient" Experiences With Being Participant to this PPD Screening Study?

Four themes (see Table 4.11) were generated from the first question.

Table 4.11

Essential Themes: Experiences of Public Health Nurses with being participant to this PPD screening research study

Essential Themes	Thematic Statements
Surprised at how well mothers can hide it	It just surprised me how well people can hide it...how they're feeling; I never would have known unless she did what she did, because this lady was really well educated, well dressed; She came in by herself with her baby and then she scored positive which was really surprising....because she didn't look like she was suffering at all.
What we were doing wasn't working	She filled it out and hadn't even noticed that it was in the teddy bear book...she filled it out and scored...she said "I didn't realize that some of these feelings were not

	normal"...she had been too busy or had not thought about looking in the book...or whatever...it made me realize that when we go out there for visits, they're too busy with feeding or.....she probably didn't even look at the book as far as that page goes...it was the biggest revelation ...
The importance of screening	I was quite shocked that she had suffered with two previous pregnancies and nobody picked up on it; They didn't share it with the doctor; The doctor didn't ask specific questions as to: how is motherhood, mood, how are you feeling, are you getting out?; So, they suffered in silence and I was quite shocked that just this little piece of paper and that little bit of discussion was the first time that he had ever had anybody talk to him about it .....he was very confident after we talked in great detail,...he was confident in recognizing those same symptoms again....he felt he could do something to help his wife ...she started to come around a little bit more when we were talking and they both agreed that they would definitely be calling if those feelings arose again.
Validated by a mother	One mom said it was a good idea and she was happy we were doing this screening...she had scored low but had postpartum depression with her first baby and made this comment "good for you guys for doing this for everybody when they come in".

Surprised at how well mothers can hide it. PHN's were surprised at the ease by which health issues can be camouflaged. A further revelation was to learn that emotional health issues know no boundaries.

> *It just surprised me how well people can hide it...how they're feeling. I never wouldn't know unless she did what she did, because this lady was really well educated, well dressed...she came in by herself with her baby and then she scored ( )..it was really surprising....because she didn't look like she was suffering at all.*

What we were doing wasn't working. The second theme was another insight for the PHN's as it brought awareness to a process, which was not functional. The current screening practice, is designed to be self-administered in the resource booklet, was not working.

She filled it out and hadn't even noticed that it was in the teddy bear book...she filled it out and scored...she said "I didn't realize that some of these feelings were not normal"...she had been too busy or had not thought about looking in the book...or whatever...it made me realize that when we go out there for visits, they're too busy with feeding or.....she probably didn't even look at the book as far as that page goes...it was the biggest revelation ...

The importance of screening. The significance of this honest face to face discussion with parents by a PHN was the most revealing. It provided comfort to the family in knowing that their emotional health issue were finally being heard and validated. It is evidence of the critical importance for screening by PHN's during CHC's as families have fallen thru the cracks in the past.

This was their third baby; ...I was pointing to the tool in the teddy bear book....Dad was asking all kinds of questions in regards to it...I read him a few questions...I was quite shocked that she had suffered with two previous pregnancies and nobody picked up on it...they didn't share it with the doctor; the doctor didn't ask specific questions as to: how is motherhood, mood, how are you feeling, are you getting out?...so, they suffered in silence and I was quite shocked that just this little piece of paper and that little bit of discussion was the first time that he had ever had anybody talk to him about it...he was very confident after we talked in great detail,...he was confident in recognizing those same symptoms again...he felt he could do something to help his wife.

Validated by a mother. The fourth and final theme shared by a PHN was about a mother's testimony of her past experience. What resonates through this theme is that

there should be equity with practice and that one standard of practice should apply to all. This mom said "it was a good idea and she was happy we were doing this screening...she had scored low but had postpartum depression with her first baby" and made this comment "good for you guys for doing this for everybody when they come in"....

Summary Comments

These findings indicate that the postpartum period is a vulnerable time for women. The relevance of these findings for treatment and policies for the CHC delivery system are discussed in the following sections.

CHAPTER 5

Discussion

In this chapter the study is summarized and the overall findings are discussed in light of the current literature. The limitations of the study are presented followed by the implications for primary health care practice, education, and policy. Recommendations for future research and summary comments close out the chapter.

Overview of the Study

The primary purpose of this study was to explore systematic screening for postpartum depression as a best practice approach to reproductive mental health during the postpartum period. A secondary purpose was to investigate demographic characteristics between women who screen positive with women who screened negative on the EPDS scale. The third purpose of the study was to examine the perceived benefits or drawbacks of using a routine PPD screening tool from the participant mothers perspective, as well to hear the perceptions of the public health nurses responsible for reviewing the results of the routine PPD screening at the two-month and four-month CHCs. This study used a descriptive mixed method research design to provide a more comprehensive picture and balanced perspective of each aspect of the inquiry.

The instrumentation used in this study included the EPDS, a short demographic data collection questionnaire, and a PHN survey utilizing the Likert scale. Two-hundred and seven mothers completed the two-month EPDS, questionnaire, and survey instruments. From this group 190 went on to complete the four-month EPDS, questionnaire, and survey instruments. Twenty demographic variables were analyzed to compare positive, borderline, and negative EPDS score of participant mothers. Pearson's

Chi-square test was performed to explore the relationships between the demographic variables of the positive and negative EPDS scores of participant mothers. T-tests were executed to compare the mean value of the independent variables within each of the two groups, mothers who screened positive and mothers who screened negative. Spearman's correlation was used as a rank order correlation test between EPDS Scores and PHN two-question survey.

Finally, two focus group interviews were conducted to examine the perceived benefits or drawbacks of using a routine PPD screening by participant mothers and perceptions of public health nurses responsible for reviewing the results of the routine PPD screening at the two-month and four-month CHCs. The interviews were transcribed and analysed using thematic analysis.

Summary and Interpretations of Findings

As the literature review revealed, the postpartum period is a vulnerable time for women to become depressed (BCRMHP, 2002; CMHA, 2005). The data suggest that as many as 10-20% of pregnant women have a new episode of either major or minor depression during pregnancy during the first four months postpartum (BCRMHP, 2002; Health Canada, 2000; Stewart et al., 2005). This study falls within the parameter of that range when both two and four month EPDS screening scores are combined. At the two-month CHC 17 (8.2%) and at the four-month CHC nine (4.7%) participant mothers screened positive for PPD using the EDPS. Of the nine participants that had positive scores at the four-month screening interval, eight were new detections as they had not scored positive at the two-month screening interval. Therefore, the study revealed an overall positive EPDS score (n=25) over the total four month period. Moreover, if we

were to combine the two and four month positive score (n=25) with the two and four-month borderline (9-11) score (n=52), the projected positive (n=77) EPDS screening rate would reach 40%. This study provides further evidence that PPD is a major health issue for new mothers.

The findings from this study support the conclusions found in other studies that explored risk factors associated with the onset of PPD. For example, this study found that mothers who scored positive were more likely to have fewer children than those who scored negative ($t= -2.95$, $p<.004$) similar to the findings of the Johnson and Apgar (2004) study. The study also found that mothers who reported as having no time for self ($X^2 = 5.45$, $p<0.05$), as having fewer people to talk to ($t=2.04$, $p<.05$), had no regular exercise ($X^2 =5.05$, $p<0.05$), and reported fewer total number of minutes to self per week($t= -2.38$, $p<.05$) were more likely to score positive (Beck, 2001; Cooper & Murray, 1998; Gotlib et al., 1989). Further, the study found that mothers who reported having an unplanned pregnancy ($X^2 = 3.93$, $p<0.05$), as feeling sad during the pregnancy ($X^2 = 8.80$, $p<0.001$), and reported having a history of depression ($X^2 =14.45$, $p<0.002$) were also more likely to score positive (Beck, 2001; Cooper & Murray, 1998; Lane et al., 1997; Wisner et al, 2002). Finally, the two-question PHN survey was correlated with the EPDS scores at the two and four month intervals. Both sets of results were small and moderately significant at the 0.01 level. The higher the EPDS score the lower a mothers self confidence, while the higher the EPDS score the more negative her anxiety score and the more anxious she was about infant care (Beck, 2001).

Moreover, the findings of this study support the conclusions of previous studies that call for increased screening, support, and treatment of maternal depression. It is

important to point out that the large number of women who scored positive or fell within the borderline group on the EDPS screening tool came as a surprise to the public health nurses. Had the screening not taken place at the CHCs, the commonly held assumption that mothers actually take the time to complete the self-administered PPD screening tool, which is provided to them at the 48 hours post hospital discharge PHN home visit, would have gone unchallenged. The focus group interview with participant mothers further revealed that they did not complete the self-administered PPD screening tool for a variety of reasons ranging from "I forgot", "no time", "forgot it existed". Many of the mothers openly confessed that they were not even aware what they were feeling was indicative of being in a PPD state. These findings are consistent with the general literature which suggests that mothers in a depressive state often do not recognize their symptoms as depression (Whitton, Warner, & Appleby, 1996) and do not take the time to complete the EPDS screening tool (Beardslee, 2002; Misri, 2002; Saunders, 2003). It is particularly difficult for mothers with new infants to separate symptoms of depression, such as fatigue, early morning awakening, or weight loss, from the normal adaptation to life with a new infant. Therefore, we need to maintain a closer watch over these women.

An additional finding that emerged from the participant mothers' focus group interview was the significance of routine screening for PPD at the two-month and four-month CHCs. The few studies that have examined routine screening for PPD show that a mother is more likely to complete the screening tool when given direct support by health care professionals (Solberg, Korsen, Oxman, Fischer, & Bartels, 1999). Many of the mothers reported that their doctors do not take the time to inquire about their mental health. Mothers have further expressed a reluctance to disclose their feelings without

having the question asked first by their physician. Further, physicians may unintentionally minimize a mother's distress in an effort to be reassuring. There is also the pressure of managed care to evaluate more patients in a limited amount of time, and mental health issues frequently receive cursory attention from even the most thoughtful physicians.

Alternatively, public health nurses have an important role to play not only in ensuring the physical well being of newborns and mothers in the postpartum period, but also in early detection of PPD. For at least some mothers, screening for PPD as part of the two-month and four-month CHCs may afford an earlier opportunity for prompt and effective interventions including additional social support.

Not only did the mothers recognize the importance of routine screening at the CHCs, but the public health nurses also had several key discoveries. For example, many of public health nurses revealed that they were surprised at how well the mothers hid their feelings and without the screening taken place at the CHCs they would not have picked-up on it. This of course raises several other concerns for the nurses including the need for additional education on PPD.

Another key finding from the study was the lack of support services for mothers who screen positive for PPD. For example, many mothers spoke about the lack of support from their partners, friends, family doctors, and the community at large. Feeling unsupported was the basic psychological problem mothers experienced during the postpartum period.

Limitations of Study

There are several limitations to this study. First, there are issues of sampling. Non probability sampling limits generalizability of findings because the sample is not a random selection of all women in the population who we may be interested in studying (Babbie, 1998). Although a sample size of 200 was sufficient enough in power to generate descriptive statistics and the targeted number of participants for the focus group, there was no provision in this study to obtain a stratified random sample to ensure that small groups within the population were included. The sample also excluded mothers under 18 years of age. Excluding this age group was a study limitation as the literature reports a higher overall percentage of PPD in this group. Therefore our study results could have been diverse.

Second, the data collection took place from January to July and did not control for seasonal effects. Results could have been varied had the study been conducted over 12 months as rates of depression may change throughout the year.

Third, the EPDS screening tool has not been validated in this paediatric setting (i.e., CHCs). This may have affected the results as no prior EPDS screening had been done in this setting at the place to confirm that it would work.

Forth, participant participation was largely dependent upon the connection between the health aide who was receiving mothers into the CHC area. There was some question as to whether mothers agreeing to be participant would influence the response of the next mother in line for her appointment, thus, raising the issue of responder bias.

Fifth, other expressed limitations by mothers where the privacy issue of having to complete the forms in the open auditorium when other people where not engaged in the

same task thus leaving some mothers feeling conspicuous. Along the same line of privacy, was mother's accompaniment to the appointment with an adult whether it was her partner or friend, this was also acknowledged as a limitation in terms of bias for response on the forms. The issue of privacy surfaced again in the actual clinic setting with the public health nurse, as freestanding barrier walls, which provided limited auditory and visual privacy, separated workstations. It was established that this environment was not entirely conducive to disclosure of sensitive and personal information.

Sixth, the PHNs did not always have the necessary time to spend with participants. The time requirement allotted for a CHC appointment created some additional stress when the screening study started. Public health nurses were required to immunize infants, while simultaneously addressing the EPDS screening scores of mothers, which, in some cases required the implementation of a referral process. When a nurse was delayed because a mother had a positive score, which required an action plan for the mother, this delayed her subsequent appointment and placed her behind in her work. To counter this anticipated delay, every PHN involved in the study received advance orientation to the research process, steps to follow with scoring results, referral contact numbers and a back-up plan for clinic delays. What became clear through this process was that nurses were openly dealing with this issue face-to-face in the clinic setting for the first time, which was in some instances stressful. The nurses felt rushed and were compelled to process things in a timely manner, which could have affected the results.

Seventh, a further limitation was operating the study from two sites and coordinating the follow-up of the participants for the four-month re-screening. The researcher could not be present at both sites simultaneously and had to rely on telephone communication daily to the alternate site to validate participants presenting for re-screening on that appointed CHC schedule.

Eight, all screening tools have their limitations, and the EPDS is no exception. The specificity of the EPDS tool is reported to be 86% while the sensitivity is 78%, (Cox & Holden, 2003). They further suggest that to detect a higher percentage of women with depression and to lower the number of missed detection to under 10%, the cut-off score would be reduced to 9 or 10. However, caution was exercised when the decision was made to use a higher more conservative cut-off, so as not to be over inclusive with mothers having false positive scores.

Ninth, a further issue identified by the mothers was having the critical identifying score on the screening sheet itself. Some mothers admitted that knowing this in advance influenced their scoring responses. This copy of the tool was identical to the tool printed in the resource booklet, which was given to each mother on a maternity home visit. For purposes of consistency and for minimizing false positive scores, the critical number remained on the tool for the duration of the study. Mothers' preferred suggestion was to have the critical score off the screening tool and have time allocated for consultation with the nurse to review the scores together.

Implications of Findings

These findings have implications for primary health care policy makers, educators, service delivery practitioners, and the public. They can be used to guide the

development of practice and policy recommendations and have the potential to reduce costs to the social and health care systems through appropriate and timely service delivery.

Policy Implications

There are at least six important areas for primary health care policy development in relation to the findings of this study. These findings are consistent with findings from other studies exploring screening for postpartum depression and have important implications for mothers and their families.

Evidence based practice. While the contribution of evidence-based research in addressing many of the complex health problems currently facing individuals and communities is well documented, there is an increasing demand for practice-based research. As Epstein (2001) asserts, evidence-based approaches to knowledge building and utilization can leave practitioners feeling alienated from the research process, with no incentive to assess and change their practice behaviors based on knowledge generated through evidence-based studies. Rather, a practice-based research approach brings practitioners into the center of the research process, thereby increasing the utilization of knowledge derived from research. Yegidis and Weinbach (2002) also report that "a practice-oriented and practice-informed researcher is likely to produce research findings that will have value and be of benefit to those who deliver services to clients" (p.8).

The entire children and family team was directly involved with the implementation of the study. The collection of data was integrated into the day-to-day activities of public health nurses and administrative personnel. Involvement of the PHNs in this study greatly enhanced their capacity to conduct research in primary care settings

and to translate research findings into practice. One of the early promises of practice-based research in primary care is that research conceived and conducted in practice settings could follow a short feedback loop back into practice and thus shorten the usually laborious translation process of applying the research results to the practice of primary care.

This study, which informed practice based research grounded public health nurses with a solid understanding to defining the case for why screening for PPD should be integrated as a standard approach during child health clinics. Nurses now view the entire issue though a new lens, one which is focused and which will provide that clarity of understanding what the best practice approach is, one that could inform a new policy for this health unit.

Recommendation #1:

Building practice-based research capacity will inevitably involve changing the culture of the organization from a bureaucratic orientation to an environment where research is a valued, expected, and enjoyable activity. The expectation should be for all public health nurses and managers to be involved in some way in the generation of new knowledge. Primary health care organizations can facilitate this culture change by explicitly valuing scholarship and research, by instilling an appreciation and understanding of research among nursing students and public health nurses by supporting the development of practice-based research studies.

Early detection and routine screening of PPD. These findings demonstrate the importance of early detection and routine screening of maternal depression. As shown in the review of the literature postpartum depression can occur any time during the first 12

months after delivery; therefore, screening for PPD should occur on a routine basis. As shown in this study eight of the nine mothers who scored positive for PD at the four-month CHC did not score positive at the two-month CHC. As stated by Strass (2002), not only are public health nurses in an ideal situation to screen new mothers in the early postpartum period, they are also the professionals who possess the working knowledge and skill set to link families to referrals and supportive community services. Routine PPD screening practices at the two and four-month CHCs will likely promote an understanding by new mothers that health care delivery is comprehensive, accessible, timely and most of all sensitive to their emotional needs. Further, it is speculated that as mothers come to be witnesses of this change in practice, they will likely be confident that this is a safe and accepting environment for disclosure of emotional health issues, a place that is a truly supportive practice environment, one that invests in the shared governance model for community health.

Recommendation #2:

The public health care authority should integrate routine screening protocols and educational mechanisms for staff training and client education related to postpartum depression (PPD) into their standard practices of care for prenatal and postpartum mothers.

Postpartum depression education for new parents. The findings of this study have also increased understanding about the threat postpartum depression has on the mother's and father's health, marriage, friendships and careers, as well as the baby's welfare. Yet, the findings of this study revealed discrepancies between prenatal parent support services and subsequent perceptions of support actually received by mothers and their partners in

relation to postpartum depression. The findings show that fathers/male partners were not perceived to be supportive, and that they lacked insight into the new mothers' reality.

Recommendation #3:

Parent education about PPD during prenatal classes can make families more aware of the risk factors and signs to watch for during the early postpartum weeks. It is recommended that a review of the prenatal education program be undertaken with the intent to increase awareness of PPD risk factors for both the pregnant women who attend the classes and their partners. As one participant stated "my prenatal class did not even mention postpartum depression".

Increase emphasis on pre-postnatal support services. In addition to prenatal education programs, there is need for secondary prevention programs targeted to mothers already experiencing depressive symptoms in order to improve parenting and child development outcomes. Participant mothers clearly noted their frustration over the lack support groups available in Prince George area.

Recommendation #4:

To improve access and support for all new mothers in urban and rural regions of the north, one avenue for future development would be exploring the option of linking to the Women North Network. This initiative could be the site of a future pilot project for a postpartum support group, one that included mothers on a steering committee as well as being involved as part of a self-help model.

Standard curriculum for medical students. Medical students need to develop a broader understanding of maternal depression after the birth of a baby. The findings suggest that family physicians are not consistently inquiring about mothers emotional

health during the postpartum check-up, there remains to be a gap in health care service delivery.

Recommendation #5:

The northern medical program could include a component of training for their family practice residents specific to reviewing the emotional health of new mothers during the postpartum follow-up period.

Continuing competency requirement. The research revealed that many of the public health nurses were uncertain about their level of competency in dealing with the outcome of a positive score on the EPDS. While there is an assumption that public health nurses are "competent" upon graduation, the reality is professional practice is a lifelong journey. What comes to our conscious awareness is that there are issues with the transfer of knowledge into the practice setting.

Recommendation #6:

Nurses have a professional obligation to develop and refine the competencies needed for safe, ethical and effective practice. There needs to be some thought invested into maintaining a continued competency with handling postpartum issues. For example, public health nurses are required to write competency exams every two years exclusively on the subject of immunization. However, when the scope of practise is broader than this one field, how is the competency in other facets of the day-to-day work measured?

It must be noted, however, that the findings and recommendations of this study have limited application to other contexts, and therefore one cannot generate axioms that are widely applicable to other situations. What this study does yield, however, are interesting insights into suggested areas for further research, specifically those using

qualitative designs as a basis for developing insight and gaining understanding into process-issues of distance education.

Recommendations for Future Research

The study has identified a number of promising areas for future research. These areas are discussed briefly. The first recommendation for future research involves adolescent mothers. The results of this study were limited to women 19 years of age and older. To have excluded the adolescent population was not an oversight but rather a testimony of the importance of this younger population group of mothers who truly warrant research initiatives, which are designed to address their specific issues. The complexity of moving thru adolescent years is a stressful transition in today's world, adding an infant to that situation can compound the life stressors. In order to begin to understand why depression manifests itself in this group at a higher reported percentage, it is logical that research design would consider the cohort specific determinants of health as defined by young mothers themselves.

A second recommendation and one, which builds on, this research study, is to explore with the mothers who scored positive in the study their experience and utilization of referral services to family physicians. What their perceptions were of how their emotional health issues were addressed and whether this improved their health outcomes. What further recommendations would they have to build upon or improve this referral process?

A third recommendation would be to explore culturally appropriate approaches for screening mothers from diverse cultures.

Concluding Comments

While this study was an exploration into systematic screening for postpartum depression as a best practice approach to reproductive mental health during the postpartum period, it has given rise to a remarkable learning experience. As a public health nurse and masters student I was successful in bridging the theoretical world to the front line practice setting in conducting this applied research pertaining to PPD screening.

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Appendix A

2 Month Demographic Questionnaire

ABOUT YOU:
Please check the boxes that best apply to you:

1) What is your age grouping? (mark only one box)

☐	19-24	☐	37-42
☐	25-30	☐	43 or over
☐	31-36		

2) What is the highest level of education you have achieved? _____

3) Which language do you speak most often at home:_____

4) How would you describe yourself? **(mark only one box)**

- ☐ Single
- ☐ Separated/Divorced
- ☐ Married
- ☐ With partner (less than 2 yrs)
- ☐ With partner (together more than 2 yrs)

5) Your family income before taxes is? **(mark only one box)**

- ☐ Under $20,000
- ☐ $21,000 to $31,000
- ☐ $32,000 to $42,000
- ☐ $43,000 to $53,000
- ☐ $54,000 to $64,000
- ☐ $65,000 or more

6) Which of the following employment categories applied to you before the baby's birth? **(mark only one box)**

☐ Full time ☐ Part- time ☐ Unemployed
☐ Other _____

7) Please mark all of the activities that describe how you take care of yourself? **(mark all that apply)**

- ☐ regular exercise ____times per week for about _____ minutes
- ☐ Walk
- ☐ Swim
- ☐ Run
- ☐ Other _____

- ☐ time to yourself____ times per week for about _____ minutes
- ☐ Read
- ☐ Listen to music daily
- ☐ Relaxing bath
- ☐ Other _____

8a) How many people (partner, close friends or relatives) do you have that you can talk to if something was troubling you? _____ **(state number please)**

8b) Of the people who are close to you, how regularly would you talk to them? **(check all that apply)**

☐ Daily ☐ Weekly ☐ Every 2 Weeks ☐ Monthly
☐ Other _____

ABOUT YOUR PREGNANCY

9a) Was this a planned pregnancy? ☐ Yes ☐ No
9b) How many children do you have? _____ **(state number please)**

10) Using the 5 point scale below, which number would best describe your general mood during the pregnancy? **(circle that which best applies to you)**

1 2 3 4 5
very happy .....*.....*.....*.....not at all happy

11) Before you were pregnant, was there a period of time in your life when you experienced depression? **(check that which applies)**

☐ never ☐ 0 to 2 years ago ☐ 2 to5 years ago ☐ more than 5 years

12) The resource booklet you received from your public health nurse during your home visit had a copy of the Edinburgh Postnatal Depression Screening (EPDS) tool in it; did you happen to fill it out?

☐ Yes: How many weeks/month (s) after birth_____
☐ No

If you did fill out the EPDS, did you have a score of 12 or greater?

☐ Yes ☐ No ☐ Uncertain

If your score was 12 or greater, did you contact anyone of the resources listed in the booklet? ☐ Yes ☐ No
If Yes: Please list the resources you contacted _____

ABOUT BABY

13) Age of baby _____

14) Gender of baby: ☐ Girl ☐ Boy

15) breastfeeding or ☐ formula feeding or ☐ both? **(mark only one box)**

Thank you for your help!

4 Month Demographic Questionnaire

ABOUT YOU:

1) What is your age grouping? **(mark only one box)** ☐ No Change

☐ 19-24 ☐ 37-42
☐ 25-30 ☐ 43 or over
☐ 31-36

2) How would you describe yourself? **(mark only one box)** ☐ No Change

☐ Single
☐ Separated/Divorced
☐ Married
☐ With partner (less than 2 yrs)
☐ With partner (together more than 2 yrs)

3) Your family income before taxes is? **(mark only one box)** ☐ No Change

☐ Under $20,000
☐ $21,000 to $31,000
☐ $32,000 to $42,000
☐ $43,000 to $53,000
☐ $54,000 to $64,000
☐ $65,000 or more

4) Please indicate if you have returned to work since your two month clinic visit? **(mark only one box)** ☐ No Change

☐ **Yes** ☐ **No**

5) Please mark all of the activities that describe how you take care of yourself? **(mark all that apply)** ☐ No Change

☐ regular exercise ____times per week for about _____ minutes
☐ Walk
☐ Swim
☐ Run
☐ Other _____

☐ time to yourself____ times per week for about _____ minutes ☐ No change
☐ Read
☐ Listen to music daily
☐ Relaxing bath
☐ Other _____

6a) How many people (partner, close friends or relatives) do you have that you can talk to if something was troubling you? __ **(state number please)** ☐ No change

6b) Of the people who are close to you, how regularly would you talk to them? **(check all that apply)** ☐ No change

☐ Daily ☐ Weekly ☐ Every 2 Weeks ☐ Monthly
☐ Other _____

6) The resource booklet you received from your public health nurse during your home visit had a copy of the Edinburgh Postnatal Depression Screening (EPDS) tool in it; did you happen to fill it out? ☐ No change

☐ Yes: How many weeks/month (s) after birth_____
☐ No

If you did fill out the EPDS, did you have a score of 12 or greater?
☐ Yes ☐ No ☐ Uncertain

If your score was 12 or greater, did you contact anyone of the resources listed in the booklet?
☐ Yes: Please list the resources you contacted_____
☐ No

ABOUT BABY

13) Age of baby _____

14) Gender of baby: ☐ Girl ☐ Boy

15) Is baby: **(mark only one box)**
☐ breastfeeding or ☐ formula feeding or ☐ both?

Thank you for your help!

Appendix B

PHN Survey

☐ 2 month ☐ 4 month

Code #:_____

EPDS score #_____

__ alone,___ with partner, ___ with another adult

FRC_____

Month: J F M A M J

Clinic: M T W Th

City _____

(Please ask mothers the following questions using the exact written words)

1. How would you best describe how you feel about yourself today as a new mother?

   _____

   _____

   On a scale of 1 to 5, where 1 is totally confident and 5 is not at all confident, how do you feel about yourself as a new mother?

   1 2 3 4 5

   totally confident .....*.....*.....*.....not at all confident

2. How do you feel about looking after your baby?

   _____

   _____

   On a scale from 1 to 5, where 1 is very anxious and 5 is not at all anxious, how do you feel about looking after your new baby?

   1 2 3 4 5

   very anxious .....*.....*.....*.....not at all anxious

   * If Positive EPDS score (12 or >) please check off referral action taken:
   - ☐ Community Response Unit (C.R.U.)
   - ☐ Physician
   - ☐ Crisis Line
   - ☐ Public Health On-call/FFP
   - ☐ Other: (state)_____

~Thank you ~

Appendix C

RESEARCH PARTICIPANT INFORMATION SHEET

Researcher: Meridy Black,
Master of Science Student in Community Health, UNBC
Phone: (250) 565-7429 E-mail: Meridy.Black @northernhealth.ca

Supervisor: Dr. Karen Kelly
Associate Professor, Chair, Health Services/Health Policy
(250) 960-6450 E-mail: kellyk@unbc.ca

Project Type: Community Health Masters Thesis, UNBC

Project Title: KEEP ASKING ME HOW I AM FEELING

Purpose: This study will find out if it is possible to screen moms during the 2 and 4 month child health clinics and help identify those who may be in the early stages of depression.

Risks: There are no known risks associated with being part of this study.

Benefits: It will benefit women who are experiencing depression, as they will be given immediate help in connecting with support services.

Participants Moms who delivered infants during the months of November 2004 to February 2005 will be invited to participate in the study.

Participation is completely voluntary.

The information you provide will be kept private.

As a participant you have the right to leave the study at any time and your information destroyed.

Your decision to participate or not will in no way influence services received now or access to any services in the future.

What are you being asked to do?

At both the 2 and 4 month Child Health Clinic you will be asked to complete a short survey about yourself, your pregnancy, and your baby, and fill out the Edinburgh screening scale. This will take 10 minutes.

The public health nurse you see will ask you 2 short questions; this will take 2 minutes.

If you score 12 or more on the Edinburgh screening scale you will be invited to take part in a one time 2 hour focus group to talk about how best to screen new mothers.

This will occur early summer of 2005. If you attend you will be paid $25.00 to help cover travel and childcare costs.

How will you keep my information private?

A code number, not your name, will be used on the forms. Personal information will not be used.

If you participate in the focus group what you and others say will be recorded without the use of names. You will also be asked to respect the privacy and confidentiality of others and what they share.

Who will be able to see my information?

Only the research student and the members of her research committee will see the information on the forms. Your name will not be used, only a code number.

How will the information be stored and for how long?

The information will be kept secure in a locked filing cabinet for 5 years. After this time, forms will be shredded and the record of the focus group destroyed.

How do I get a copy of the results of the research?

If you are interested just ask Meridy Black. She will provide you a summary of the results of the study. You could also check out a copy of her completed thesis at the UNBC library.

Please contact Meridy Black or her supervisor, Dr. Karen Kelly at the above numbers if you have any questions. If you have any complaints or would like to report any violation of professional or ethical conduct during this study please call the Vice-President Research, UNBC at 960-5820.

Appendix D

Informed Consent Form

Do you understand that you have been asked to be in a research study?	Yes ☐	No ☐
Have you read and received a copy of the attached information sheet?	Yes ☐	No ☐
Do you understand that the focus group will be recorded?	Yes ☐	No ☐
Do you understand the benefits and risks involved in participating in this study?	Yes ☐	No ☐
Have you had an opportunity to ask questions and discuss this study?	Yes ☐	No ☐
Do you understand that you are free to refuse to participate or to withdraw from the study at any time? You do not have to give a reason and it will not affect any medical or other kind of care you are receiving.	Yes ☐	No ☐
Has the issue of confidentiality been explained to you?	Yes ☐	No ☐
Do you understand who will have access to the information you provide?	Yes ☐	No ☐

This study was explained to me by: _____
Print Name

I agree to take part in this study:

_____ Date: _____
Signature of Research Participant

_____
Printed Name of Research Participant

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ Date:_____
Signature of Investigator

_____ Date: _____
Signature of Investigator

Appendix E

Definition of Terms

" pop-up alerts" : This term is used to signify a special alert to healthcare professionals accessing this infants file. In this study, it was applied to the infants electronic database file to inform nurses of the study code # associated with this infant for the four month follow-up screening.

" iphis data base" : This term is used to signify the computer program which houses the health information on an infant and family members.

"check-in" : This term was used to signify the point of entry to the child health clinic, it is the first point of contact with the health aide who acknowledge mothers and infants attendance on the scheduled appointment list. Once this was completed, she initiated her admin work.

"study envelope box" : This term was used to signify the study box which was used to house the study forms, study envelopes and guidelines for the research process. It kept the paperwork organized and orderly. It was easily portable to the worksite each day and returned to the researchers office at the completion of each day.

" study envelope storage container" : This term was used to signify the designated container in the researchers office into which the public health nurses deposited the sealed study envelopes following each child health clinic. At the completion of each day, the researcher removed the sealed envelopes and locked them in the designated filing cabinet for safe storage.

Appendix F

Northern Health / The University of Northern British Columbia
have given approval for this study.

YOU ARE INVITED TO BE PART OF THIS STUDY

If you are a new mother of 19yrs and older and are attending an immunization appointment with your baby of 2 months, between January and April of 2005, then this study might interest you.

As new mothers we are often faced with a variety of challenges, which can make the role of being a mother, at times, a hard thing to do. No two mothers experiences are the same when it comes to mothering a new baby as we all experience pregnancy and birth somewhat uniquely. As well, we all have different life events that play a big part in how we cope with this new role. What might appear to be just perfect one week may suddenly change because of a life event the next week, leaving us with feelings of uncertainty.

The purpose of this study is to ask new mothers some questions about their emotional health while they come for their infant's immunization appointments at 2 and 4 month's of age. Some mothers are being challenged with their emotional feelings and may not have a chance to really tell the nurse how they are feeling. So, this study hopes to make that change so that mothers will have the chance to voice their real feelings with their public health nurse.

You will be asked to fill out a simple screening scale and to complete a simple questionnaire; this will take about 10 minutes. Your public health nurse will ask you 2 simple questions.
All this information is kept private between the researcher and her research committee. If however, we find that any mother is experiencing thoughts of harming herself or those in her household, we have the duty to report this to her family doctor.

~Thank you for your consideration ~

Appendix G

PHN Guidelines

When PHN's discover mothers with EPDS scores within the following numerical range: (0 to 8), (9 to 11), (12 to 30), they will take the action as outlined upon this sheet:

Scenarios

1. When a mother scores between **0 to 8** on the EPDS, the score will be recorded on the designated line of the PHN survey. PHN's will discuss with mothers that should they feel any changes with their emotions before their next clinic appointment that they should connect with the children & families on-call line for consultation of available resources or connect with their family doctor.

2. When a mother scores between **9 to 11** on the EPDS, this score will be recorded on the designated line of the PHN survey. The PHN will encourage this mother to connect with her family doctor or other primary healthcare provider. The PHN will provide the mother with a list of current resources.

3. When a mother scores between **12 to 30** on the EPDS, this score will be recorded on the designated line of the PHN survey. The PHN will, with the mother's agreement, call upon the on-call nurse or the back-up immunization nurse to assist the mother in connecting with the:
    a) Community Response Unit
    b) Family Doctor
    c) Emergency Department

* The PHN will then record the action taken upon the PHN survey form.
* In the event that the mother refuses to seek referral, as advised by the clinic PHN and departs on her own accord, it will be the responsibility of the attending nurse to call this women's family doctor and notify him or her of the situation and score. PHN'S have a duty to report when the well being of a person or persons within their care may be threatened.
* If a mother is believed to be psychotic and the mother disagrees to receive assistance, the PHN will seek assistance to refer this mother to the PGRH emergency department.
* PHN'S are cognisant about the sensitivity of this issue and further understand that this clinic setting is limited in its provision of an environment, which is private for discussions of a sensitive nature. Therefore, they will assert their best practice effort in having this conversation and will not take action, which could result in the creation of a scene for either this mother her or that of other attending families.

Appendix H

RESEARCH PARTICIPANT INFORMATION SHEET AND CONSENT

Researcher: Meridy Black,
Master of Science Student in Community Health, UNBC
E-mail: Meridy.Black @northernhealth.ca

Supervisor: Dr. Karen Kelly
Associate Professor, Chair, Health Services/Health Policy
E-mail: kellyk@unbc.ca

Project Type: Community Health Masters Thesis, UNBC

Project Title: KEEP ASKING ME HOW I AM FEELING

Focus Group Participants

Purpose: This study will investigate if screening moms during the 2 and 4 months child health clinics will help to identify those moms who may be in the early stages of depression.

Risks: There are no known risks associated with being part of this study.

Benefits: It will benefit women who are experiencing depression in that they will be given immediate help in connecting with support services.

Participants: PHN participants were chosen based on years of experience and full time employment or connection with PPD in their nursing role. Participation is completely voluntary.

What are you being asked to do?

You are being asked to participate in a 1½ hr focus group to discuss your experiences in the PPD screening study.

How will the confidentiality of the information be maintained?

The focus group will be taped-recorded and transcribed. All personal identifying information will be omitted from the transcription. Information will not be linked to participants. No names will be recorded on the audiotape and the identity of participants will be held confidential. Participants of the focus group will also be asked to respect the privacy and confidentiality of others and what they share.

How will the information be stored and for how long?

The information will be kept secure in a locked filing cabinet for 2 years. After this time the audio-tape will be destroyed.

How do I get a copy of the results of the research?

If you are interested just ask Meridy Black. She will provide you a summary of the results of the study. You could also check out a copy of her completed thesis at the UNBC library.

Please contact Meridy Black or her supervisor, Dr. Karen Kelly at the above numbers if you have any questions.

If you have any complaints or would like to report any violation of professional or ethical conduct during this study please call the Vice-President Research, UNBC.

Informed Consent

Do you understand what you have been asked to be in a research study? Yes__
No__

Have you read and received a copy of the attached information sheet? Yes__
No__

Do you understand that the focus group will be recorded? Yes__
No__

Do you understand the benefits and risks involved in participating in the focus group? Yes__
No__

Have you had an opportunity to ask questions and discuss this study? Yes__
No__

Do you understand that you are free to refuse to participate or to withdraw from the study at any time? Yes__
No__

Has the issue of confidentiality been explained to you? Yes__
No__

Do you understand who will have access to this information? Yes__
No __

This study was explained to me by: _____

I agree to take part in this study:

Signature of Research Participant Date

Printed Name of Research Participant

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

Principle Investigator Date

Appendix I

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

		Two Month (n=207)		Four Month (n=190)	
Demographic variable		Frequency	Percent	Frequency	Percent
Age	19-24	51	24.5		
	25-30	97	46.9		
	31-36	50	24.2		
	37+	8	3.9		
Education	< grade12	31	15.1		
Grade 12,Trade or College		132	62.3		
	University	38	17.9		
Language	English	195	92		
	Other	9	4.4		
Marital status	Single	24	11.3		
	Married	117	55.2		
	Coupled <2yr	16	7.5		
	Coupled >2yrs	48	22.6		
SES	< 20,000	43	20.3		
	21-42,000	40	18.8		
	43-64,000	39	18.4		
	65,000 +>	74	34.9		
Employment	Full time	118	55.7		
History	Part-time	39	18.4		
	Unemployed	48	22.6		
Regular exercise	Yes	174	82.1	133	62.7
	No	33	15.6	57	26.9
Time to self	Yes	174	82.1	118	55.7
	No	33	15.6	72	34.0
Number of people	1-5	119	56.2	105	49.5
to talk to	6-10	72	34	65	30.7
	11>	9	4.3	13	6.1
Parity	1	110	51.9		
	2	72	34.0		
	3+>	25	11.7		
Planned Pregnancy	Yes	128	60.4		
	No	74	34.9		
Mood in Pregnancy	V. Happy	64	30.2		
	Happy	73	34.4		
	Neutral	49	23.1		
	Not Happy	14	6.6		
	Not at all Happy	3	1.4		
History of Depression	Never	113	53.3		
	0-2years	34	16		
	2-5 years	28	13.2		
	> 5years	29	13.7		

Resource booklet – EPDS used	Yes	51	24.1	68	32.1
	No	147	69.3	102	48.1
If completed EPDS was score ≥12	Yes	5	2.4	10	4.7
	No	37	17.5	43	20.3
	Uncertain	7	3.3	16	7.5
Score ≥12 did you contact resources	Yes	4	1.9	6	2.8
	No	10	4.7	19	9.0
Age of Baby	8 weeks	164	77.4		
	9 weeks	25	11.8		
	10+11 weeks	18	8.5		
Gender of Baby	Male	101	47.6	95	44.8
	Female	106	50.0	94	44.3
Feeding type	Breast	91	42.9	77	36.3
	Formula	72	34.0	90	42.5
	Both	43	20.3	20	9.4
Participant Visit	Alone	109	51.4	90	42.5
	With Partner	55	25.9	70	33.0
	With another Adult	25	11.8	11	5.2
Clinic location	FRC	12	5.7	17	8
	Health Unit	194	91.5	171	80.7
Return to work	Yes			12	5.7
	No			174	82.1
Age of Baby	16 weeks			163	76.9
	17 to19weeks			25	11.7
	20 to 22 weeks			3	1.4

Appendix J

PEARSON'S CHI-SQUARE RESULTS AT TWO MONTHS

Demographic Variables:	Grouping	Positive EPDS (≥ 12)	Negative EPDS (< 12)	Chi-sq. Value	Sig.
Age	19-30	14	134		
(N=206)	31+	3	55	1.011b	0.315
	Total	**17**	**189**		
Education					
(N=201)	< High School	3	28		
	High School, Trade School or College	11	121		
	University	3	35	0.078a	0.962
	Total	**17**	**184**		
Marital Status	Single	3	21		
(N=205)	Married	10	107		
	Partner <2yrs	1	15		
	Partner >2yrs	2	46	1.762a	0.623
	Total	**16**	**189**		
S.E.S.	<20,000	3	40		
(N=196)	21,000-42,000	4	36		
	43,000-64,000	2	37		
	65,000 +	6	68	0.713a	0.87
	Total	**15**	**181**		
Employment	Full-Time	11	107		
(N=204)	Part-Time	2	37		
	Unemployed	4	43	0.677a	0.713
	Total	**17**	**187**		
Regular	Yes	11	161		
Exercise	No	6	27	**5.058b**	**0.025**
(N=205)	**Total**	**17**	**188**		
Time to	Yes	11	162		
Self	No	6	26	**5.453b**	**0.02**
(N=205)	**Total**	**17**	**188**		
Planned	Yes	7	121		
Pregnancy	No	10	64	**3.937b**	**0.047**
(N=202)	**Total**	**17**	**185**		
Mood in	V. Happy	3	61		
Pregnancy	Happy	3	70		
(N=203)	Neutral	8	41		
	Not & Not at all Happy	3	14	**8.807a**	**0.032**
	Total	**17**	**186**		

History of Depression (N=204)	never	4	109		
	0-2yrs ago	6	28		
	2-5 yrs ago	6	22		
	>5 yrs ago	1	28	**14.452a**	**0.002**
	Total	**17**	**187**		
Resource booklet	Yes	6	45		
	No	10	135	1.193b	0.275
EPDS (N=196)	**Total**	**16**	**180**		
Gender Of Infant (N=207)	Girl	11	95		
	Boy	6	95	1.351b	0.245
	Total	17	190		
Feeding (N=206)	Breast	4	87		
	Formula	7	65		
	Both	6	37	3.839a	0.147
	Total	**17**	**189**		
Pt. Visit (N=189)	Alone	10	99		
	Partner	4	51		
	other Adult	1	24	0.792a	0.697
	Total	15	174		

PEARSON'S CHI-SQUARE RESULTS AT FOUR MONTHS

Demographic Variables:	Grouping	Positive EPDS (≥ 12)	Negative EPDS (< 12)	Chi-sq. Value	Sig.
Age	19-24	2	42		
(N=189)	25-30	6	84		
	31-36	1	47		
	37+	0	7	1.834a	0.608
	Total	**9**	**180**		
Marital Status	Single	2	24		
(N=189)	Married	3	103		
	Partner (<2yrs	2	12		
	Partner (>2yrs)	2	41	4.166a	0.244
	Total	**9**	**180**		
SES	< 20,000	3	34		
(N=178)	21,000-42,000	4	37		
	43,000-64,000	1	33		
	65,000+	1	65	4.645a	0.2
	Total	**9**	**169**		
Return to work	Yes	0	12		
(N=186)	No	9	165	0.652b	0.419
	Total	**9**	**177**		
Regular Exercise	Yes	7	165		
(N=189)	No	2	15	2.020b	0.155
	Total	**9**	**172**		
Time to Self	Yes	9	151		
(N=190)	N0	0	30	1.771b	0.183
	Total	**9**	**181**		
Resource EPDS	Yes	4	64		
(N=170)	No	4	98	0.35b	0.554
	Total	**8**	**162**		
Gender of Infant	Girl	7	87		
(N=190)	Boy	2	93	3.037a	0.219
	Total	**9**	**181**		
Feeding type	Breast	3	74		
(N=187)	Formula	5	85		
	Mixed	1	19	0.251a	0.882
	Total	**9**	**178**		
Pt. Visit	Alone	7	83		
(N=171)	Partner	2	68		
	other Adult	0	11	2.565a	0.277
	Total	**9**	**162**		

Appendix K

T-TEST RESULTS AT TWO MONTHS

Demographic Variables:		Positive EPDS (≥ 12)	Negative EPDS (< 12)	T-Test	Sig. (2-tailed)
Exercise Frequency per week (N=126)		8	118	-0.317	0.752
	Total	**8**	**118**		
Number Minutes (N=122)		8	114	0.392	0.696
	Total	**8**	**114**		
Frequency of time to self in week (N=148)		10	138	-0.749	0.455
	Total	**10**	**138**		
Number of minutes (N=144)		9	135	**-2.385**	**0.018**
	Total	**9**	**135**		
People to talk to (N=192)		14	178	**2.041**	**0.043**
	Total	**14**	**178**		
Parity (N=207)		17	190	**-2.952**	**0.004**
	Total	**17**	**190**		
Number of weeks when completed resource EPDS (N=207)		17	190	-1.052	0.294
	Total	**17**	**190**		
Age of Infant (N=207)		17	190	0.412	0.681
	Total	**17**	**190**		

T-TEST RESULTS AT FOUR MONTHS

Demographic Variables:	Grouping	Positive EPDS (≥ 12)	Negative EPDS (< 12)	T-Test	Sig. 2-tailed
Exercise Frequency per week (n=131)		5	126	1.417	0.159
	Total	**5**	**126**		
Exercise minutes (n=127)		5	122	-0.228	0.82
	Total	**5**	**122**		
Time to self frequency (n=130)		6	124	-0.494	0.622
	Total	**6**	**124**		
Time to self minutes (n=40)		1	39	0.304	0.763
	Total	**1**	**39**		
People to talk to (n=182)		8	174	**1.912**	**0.057**
	Total	**8**	**174**		
Resource EPDS-wks completion (n=39)		2	37	0.006	0.995
	Total	**2**	**37**		
Age of Infant (n=190)		9	181	-0.702	0.483
	Total	**9**	**181**		